

A NEW PARADIGM FOR BRITISH AIRPOWER?

BY

RICHARD D. GRIMSHAW, WING COMMANDER, RAF

A THESIS PRESENTED TO THE FACULTY OF
THE SCHOOL OF ADVANCED AIR AND SPACE STUDIES
FOR COMPLETION OF GRADUATION REQUIREMENTS

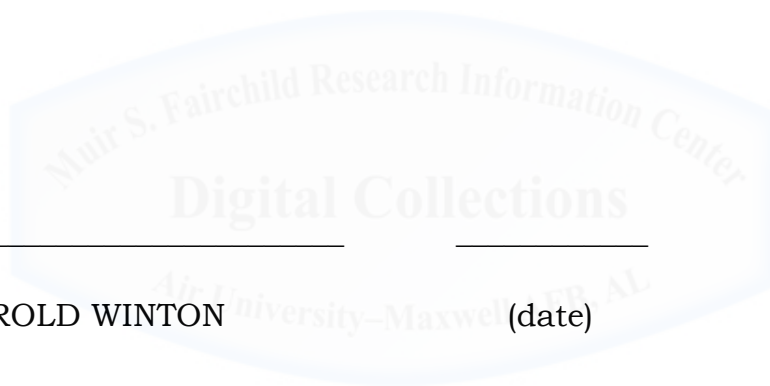
SCHOOL OF ADVANCED AIR AND SPACE STUDIES
AIR UNIVERSITY
MAXWELL AIR FORCE BASE, ALABAMA
JUNE 2012

APPROVAL

The undersigned certify that this thesis meets master's-level standards of research, argumentation, and expression.

Dr. JOHN B. SHELDON (date)

Dr. HAROLD WINTON (date)



DISCLAIMER

The conclusions and opinions expressed in this document are those of the author. They do not reflect the official position of the UK or US governments, the Ministry of Defence, the Department of Defense, the Royal Air Force, the United States Air Force, or the Air University.



ABOUT THE AUTHOR

Wing Cdr “Spike” Grimshaw joined the RAF as a University Cadet in 1987. He qualified as a helicopter pilot in 1990 and flew 3 tours on the Sea King and Wessex in the search and rescue and the support helicopter roles (SH). In 1998 he was appointed as the Air Liaison Officer with the Army’s HQ 3rd (UK) Division during which time he deployed to Kosovo during the ground invasion. Changing branch to Ops Support (Flt Ops), he was appointed Officer Commanding 606 (Chiltern) Sqn, a relatively new Royal Auxiliary Air Force unit with a remit to provide augmentees to the RAF’s SH Force. In 2004, he completed the “full set” of service appointments when he was posted to the Defence Intelligence Staff as the Maritime Aviation analyst with the Royal Navy. This tour included a six-month detachment to Baghdad as the UK analyst within the US Combined Intelligence Operations Center. The end of this tour saw him attend the Advanced Command and Staff Course, followed by promotion to wg cdr and a posting as Chief of Staff of the UK Joint Force Air Component Headquarters. The period included a detachment to ISAF HQ, Kabul, as the Air Long-Range Planner. This tour was followed by a further command appointment as OC Operations Wing/Station Executive Officer at RAF Shawbury before being awarded the Spaatz Fellowship to attend SAASS.

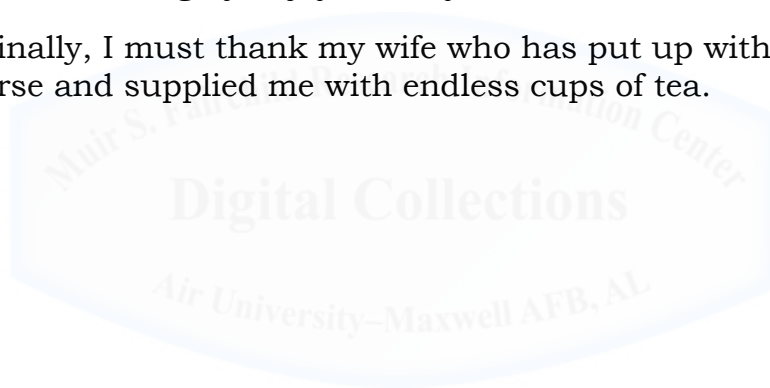
Wg Cdr Grimshaw has a BSc in Agricultural Zoology from the University of Newcastle upon Tyne, UK, and an MSc in Defence Studies from King’s College, London. He is married to a very forgiving woman, and they have one daughter.

ACKNOWLEDGMENTS

Firstly, I must acknowledge the help and encouragement of Group Captain “Bunny” James who originally persuaded me to apply for SAASS and encouraged my initial scribbling. I would also like to thank Admiral Sir Mark Stanhope, General Sir Peter Wall, and Air Chief Marshal Sir Stephen Dalton for making time in their very busy schedules for my interviews. The insight those sessions gave me into higher-level thinking was invaluable.

It would be remiss of me not to give an enormous thank you to Dr John Sheldon. The time spent discussing all aspects of the course, this thesis, and a British perspective of American culture has kept me relatively sane. Thank you also to Dr Winton who spent considerable time correcting some bad habits, the output is far better for the guidance. I must also give a collective thank you to all my fellow Class XXI students for the various arguments and debates throughout the year; I have thoroughly enjoyed every minute of it.

Finally, I must thank my wife who has put up with me throughout the course and supplied me with endless cups of tea.



ABSTRACT

The nearly century-old paradigm of Western military institutions consists of three separate services organized and equipped to defeat a peer competitor in major combat operations. In any conflict the services will have some interaction, but the majority of the fighting will be separate. World War II and Cold War scenarios epitomize this thinking. For the UK, as with most nations, this type of warfare would involve joining coalitions in order to generate significant combat power. Having established itself for the most dangerous situation, the UK has always believed it can draw its forces into a sufficiently coherent configuration for lesser operations.

This thesis examines that paradigm in the light of financial restrictions imposed upon the UK's military establishment through the twentieth and early twenty-first centuries, culminating in the 2010 Strategic Defence and Security Review. The fiscal pressures exerted by these reviews have now created significant capability gaps. But by examining the current and future forecast of military activity and looking forward rather than backward, it may be possible to maintain a strategically meaningful defense capability even with reduced resources. This perspective would require the UK to consider a new paradigm for organizing and utilizing its military forces. Such a paradigm would be based largely upon airpower, due to its inherent flexibility across the physical domains of land and sea. Two potential contemporary alternatives are considered, the US Marine Corps and the Israeli Defence Force/Air Force. Both demonstrate that airpower can be organized differently than in the UK model, yet very successfully. The final section examines how these alternatives could be adjusted to suit UK-specific requirements and explores the issues surrounding implementation.

The thesis concludes that a new paradigm has merit for the UK. Bringing all air resources under the auspices of an environmental specialist would make maximum use of the scarce means available. Combined with an expectation of operating together as a coherent force rather than as three separate services in the same theater, UK military forces will be better placed to succeed in the most likely short-to medium-term scenarios. They will, however remain able to respond to the demands of the most dangerous requirement of full- spectrum warfare as part of a wider coalition. The adjustment would not require immediately re-equipping the force, though the change would influence future procurement. Instead, the change of paradigm would essentially require a change of mentality for both the services and the nation. It could represent a conceptually high- risk strategy, but the alternative is an increasingly hollow force. National requirements to maintain

international prestige demand something new before the UK defense establishment reaches the edge of chaos.



CONTENTS

APPROVAL.....	i
DISCLAIMER.....	ii
ABOUT THE AUTHOR.....	iii
ACKNOWLEDGMENTS.....	iv
ABSTRACT.....	v
Introduction.....	1
Chapter 1 Significant UK Defense Reviews through the Twentieth Century	7
Chapter 2 The Strategic Defence and Security Review.....	22
Chapter 3 Two Alternative Paradigms.....	38
Chapter 4 A New Paradigm?.....	57
Conclusions.....	81
Bibliography.....	90

ILLUSTRATIONS

Figure 1. MAGTF Organization.....	45
Figure 2. ACE Functions and Responsibilities.....	46
Figure 3. USMC Scales of Effort and Response Times for Deployment.....	64

Introduction

We must create the new directing organization – the new Ministry and Air Staff which could properly handle this new instrument of offence, and equip it with the best brains at our disposal for the purpose. The task of planning the new Air Service organization and thinking out and preparing for schemes of aerial operations next summer must tax our Air experts to the utmost.

- Gen Jan Smuts

How should the UK make the most of its airpower with limited resources to meet national interests?¹ This challenge is not one of change in threats to national security or in national perspective, nor is there a need to respond to a dramatic change in national circumstances. The challenge is how to balance the national economy while maintaining position in the world both today and in a future full of uncertainty. Fundamentally, the country cannot afford to keep organizing for defense in the way it has been doing. From the military perspective, change is certainly not through choice but necessity. A review of UK national newspapers, radio and television commentaries, and interviews shows that no individual service is calling for these changes; no one believes reduction in strength will improve overall capability, but change is nonetheless required.² So, the challenge remains, how best to make the

¹ Throughout this paper the term “airpower” will refer to any flying machine, piloted or otherwise, producing an effect. The term will not reflect ownership of the machine, a flying machine owned by an army, navy or air force will still be generating air power. This reflects the UK definition of Air and Space power: “Air and space power is the capability to project power from the air and space in order to influence the behavior of people or the course of events. *Air Publication (AP) 3000. British Air Power Doctrine*. 4th Ed. 2009, 7.

http://www.raf.mod.uk/rafcms/mediafiles/9E435312_5056_A318_A88F14CF6F4FC6CE.pdf.

The UK describes four fundamental roles of air power: control of the air; mobility and lift; intelligence and situational awareness; and attack. *Future Air and Space Operational Concept* (FASOC) 2009.

Development, Concepts, and Doctrine Centre, 2-2 – 2-5.

<http://www.mod.uk/DefenceInternet/MicroSite/DCDC/OurPublications/Concepts/>.

² For example, Air Chief Marshal Dalton, “Head of RAF warns against ‘short term’ military spending decisions,” *The Daily Telegraph*, 25 January 2010.

<http://www.telegraph.co.uk/news/newstopping/ontheheadline/7067393/Head-of-RAF-warns-against-short-term-military-spending-decisions.html>. Also Michael Clarke “Strategic Defence and Security Review: Britain faces impossible choices in an uncertain world”, *The Daily Telegraph*, 13 September 2010,

<http://www.telegraph.co.uk/news/uknews/defence/7999461/Strategic-Defence-and-Security-Review->

most out of the UK's military power, airpower in particular, with the limited resources available to meet the national interests. This is not about changes in equipment or, in many respects, personnel. Arguably, the UK already has, or is about to have, a military force equipped with the best available hardware and manned with highly capable and trained individuals.³ The potential paradigmatic shift outlined in this thesis is in the way people and equipment are put together into a coherent package. For some this may represent unpalatable, radical change; but it is ever thus with a shift in paradigm. In a possibly novel way of considering the idea of a paradigm shift, it may even be reversible if funds were to be again available. Fiscal pressures have put the UK military at the edge of chaos, where the old way of doing things may no longer provide the answers to the current and projected set of problems.⁴ Fiscal pressure, rather than any new doctrinal reasoning or military development, is the driver. Furthermore, because it is a political choice as to where austerity measures are made, the UK may make this paradigmatic shift in thinking on its own, or ahead of its peer group, for example France, or its most powerful ally, the United States.

Ever since the potential for its use on the battlefield was credibly demonstrated during World War I, airpower has caused difficulties with how it is to be organized and employed because it bridges the traditional land and maritime domains and the demarcations of armies and navies. Airpower could enhance the operations of the older services, but it also

[Britain-faces-impossible-choices-in-an-uncertain-world.html](#), "Defence Chiefs warn cuts to threaten security," *Letter to the Sunday Telegraph*, 18 June 2011, <http://www.telegraph.co.uk/news/uknews/defence/8584032/Defence-chiefs-warn-cuts-threaten-security.html>, and "The Defence Reform Agenda," *RUSI Briefing Paper*, June 2011, www.rusi.org/downloads/assets/201106_DRU_Briefing_Paper.pdf.

³ Michael Clarke, "The Overdue Defence Review: Old Questions, New Answers," *RUSI* 153, No 6, December 2008, 6. Also Timothy Edmunds, "The Defence Dilemma in Britain," *International Affairs*, 86, Issue 2, March 2010, 382-388.

⁴ M. Mitchell Waldrop, *Complexity: The Emerging Science at the Edge of Order and Chaos*, (NY: Simon & Schuster, 1992), 12. "The edge of chaos is where new ideas and innovative genotypes are forever nibbling away at the edges of the status quo, and where even the most entrenched old guard will eventually be overthrown."

had the potential to provide notable effects. Airpower began as a useful addition to traditional military capabilities but soon became a threat to the older ways of doing things. Airpower, personified in the UK by the Royal Air Force (RAF), has been troublesome to land and maritime power for the last 100 years because it transcends physical barriers and has utility and influence throughout any given battlespace.⁵

From a strategic perspective, the real issue remains how best to enforce political will through the use of military force. For the armed forces it is then a case of how best to organize themselves to meet the political goals. The problem is particularly acute for the UK, which retains an identity and aspirations from its former status as the world's greatest power. These are pretensions the country has not been able to afford for some time but the current financial climate has exposed the difficulty in supporting ideals with substance. The importance in resolving this conundrum is vital to the international standing of the UK for the next 50 years or so.

This thesis seeks to explore whether continuing to meet the defense requirement by using the usual methodology is the best option for the future. In exploring previous attempts to resolve similar problems, the thesis will show that although decisions have often been made with good intentions, the necessary changes in thinking by military leaders has not followed suit. Thus, inter-service tensions and parochialism have prevented good intentions from being implemented. The UK, however, has now reached a time when the gradual reductions in force, culminating in those of the Strategic Defence and Security Review (SDSR), can no longer sustain single-service thinking as far as

⁵ Throughout the thesis, military operations will be defined by their operating environment. Air refers to elements which fly hence the definition of airpower described above. Land refers to ground forces, Maritime to those operating on water, Space for operations above 100km, and Cyber for activities using the electromagnetic spectrum for the handling of information. These terms are agnostic of the military service undertaking the operation.

the organization of the UK military is concerned. The issue is not about existence of services, but rather how the services utilize the domains for which they are specialists and how the other domains can use their expertise, resources, and capabilities to obtain the very best capability to meet national requirements. The difficulty has not been how the UK has trained or in most respects with what it has been equipped with equipped, but rather how it has organized and employed the grand enabler of airpower.

Some of the difficulty in accepting a changed future is acceptance that the past has gone. Britain's military history induces understandable pride, and it is often difficult for people to accept the reality that the past they have fought for no longer exists. Much of the drag on change is not through the work of those currently in the armed forces but rather those that have left and the members of society who hold dear to tradition that now borders on dogma. In answering the question posed, this thesis cannot resolve how to garner acceptance of change by the wider community. Nor does it define how changes should be implemented, though a comprehensive education effort is recommended. Such broad implementation is firmly the role and responsibility of Government, the Service Chiefs and their staffs. As with past reviews and studies, government has given guidance on what is required and the resources available - the ends and means. The services are now responsible for collectively assembling the ways.

The RAF was conceived at the end of World War One (WWI) as a way of answering this problem. General Smuts sought to consolidate British military airpower into a single organization in order to derive the most benefit from the capability in 1917 and the future. Smut's views were prescient, foreseeing that the way of waging war would change as technology improved airpower's capability and that effective use of the

capability would require specialists to make the most of it.⁶ His ideas, though, have not necessarily been followed in the way he had envisaged. Politics, finances and individual predispositions have meant that airpower has generally been considered within individual service domains. This phenomenon has created the need for rapid and sometimes painful readjustment in combat. Together with most other countries, the UK finds itself in a financial crisis and is making significant public-spending reductions to balance the budget. Defense-spending reductions have been paring away resources for many years with services reducing capabilities in a “salami slice” fashion. The SDSR, however, marked the point at which this was no longer an option. Whole capabilities have now been removed. Since the 1917 Smuts report, airpower has continued to develop over time, but it remains divided across the services. The threat to the UK’s national standing and interests has also changed over time, most notably in the lack of a peer-competitor threat. The thesis question explores the possibility that the force available for the future, as stated in the SDSR, can best meet strategic ends by being organized and employed differently. There are alternatives to continuing to perform the same roles and missions but with fewer resources. These alternatives are exemplified by the US Marine Corps and the Israeli Defence Force. Both these organizations have a fearsome reputation for employing airpower in support of overall force objectives. Each will be examined to determine if it provides a useful template with which to meet the UK’s circumstances. Discussions with the current UK service chiefs reveals there remain differing perspectives on the future as well as many complications in changing from one way of doing things to another. As the UK’s armed forces have demonstrated in many positions, victory can be achieved even when the organization is not optimal. Nevertheless, it is never a sound proposition

⁶ Second Report of the Committee on Air Organisation and Home Defence Against Air Raids. 17 Aug 1917. The UK National Archives CAB/24/22, 3-4.

of war to fight with a poor organization. As this thesis will demonstrate, however, organizational change also demands mental adjustments.



Chapter 1

Significant UK Defense Reviews through the Twentieth Century

Ladies and Gentlemen, these are testing times - for the country as a whole and for Defence in particular. Testing times force us to make unpalatable decisions, but they provide opportunities too.

- Rt Hon Liam Fox

Reviews of the way the Armed Services support national strategy are nothing new. The snapshots below chart a gradual change in the position of the UK in world standing from being the global hegemon to becoming a leading country under the shadow of the latest global power, the United States. All three reviews were driven by political imperatives, and all three contain key findings that significantly influenced the way the UK thought to organize and employ its airpower. As is inevitable in affairs of states, money played a significant role in either the initial direction of the report or in its consequences. With the Strategic Defence and Security Review (SDSR) being very much driven by financial austerity, the examples described below serve as useful background to any future decisions made to changes in UK's application of airpower.

The Smuts Report and the Formation of the RAF

The air raids by German Gotha bombers over London in July 1917 brought to a head a number of ongoing issues within the British establishment regarding the effective organization and use of airpower. The Royal Flying Corps (RFC) was making every effort to support the ground campaign in Europe, while the Royal Naval Air Service (RNAS) was both supporting fleet operations and defending the homeland. The latter came as an extension of its traditional role of defending the sea approaches to Britain. Although the previous Zeppelin raiders had been defeated, the Gotha raids were proving far more troublesome. At the

same time, reprisal air attacks against Germany were being encouraged within Parliament; but denuding the Western Front of fighter squadrons (sqns) to carry out these reprisals was resisted by the British Army. Britain's Prime Minister, David Lloyd George, argued that a thorough review of the defensive and offensive use of airpower by a fresh and able mind free from departmental prejudices had become necessary. Thus, the recently arrived South African General Jan Smuts was charged to examine home defense against air raids and the entire organization of the British air effort.¹

Great Britain had developed two separate air services because in the early years of airpower, its seeming ancillary functions relative to ground and sea operations, required nothing else.² The rapid advance in the uses and capabilities of airpower had revealed this obsolete. Smuts had witnessed at least one German air raid and was struck by the potential for the independent use of airpower beyond that of direct support to the army and navy.³ As a result, his inquiries produced two reports. The first dealt with the air defense of the London area and was quickly implemented; the second which dealt with the overall organization of airpower was far more forward leaning.⁴

Smuts believed the current system of two separate air services, with a weak Air Board to facilitate procurement issues, to be inefficient and wasteful. He recommended the creation of an Air Ministry and staff

¹John Sweetman, "The Smuts Report of 1917: Merely Political Window-Dressing?" *The Journal of Strategic Studies* 4, Issue 2 (January 2008), 152-156.

²Air Publication (AP) 3003. *A Brief History of the Royal Air Force*, (London, UK: HMSO, 2004), 5-10. Although the Army and Royal Navy had experimented with aircraft since 1910, it was not until March 1912 that the Army created the RFC that originally consisted of a military and a naval wing. The RNAS was formed in July 1914 when the naval wing was split from the RFC. Also Malcolm Smith, *British Air Strategy Between the Wars*, (Oxford, UK: Clarendon Press, 1984), 15-16.

³Sweetman, "The Smuts Report of 1917," 156. Smuts witnessed the daylight raid on London on 13 June 1917 from his hotel room and subsequently toured the bomb damage.

⁴*First Report of the Committee on Air Organisation and Home Defence Against Air Raids*. 9 Jul 1917. The UK National Archives CAB/24/20. *Second Report of the Committee on Air Organisation and Home Defence Against Air Raids*. 17 August 1917. The UK National Archives CAB/24/22.

similar to those of the Army and Navy. This ministry would be responsible for “the control and administration [of] all matters in connection with aerial warfare of all kinds whatsoever, including lighter-than-air as well as heavier-than-air craft.”⁵ The new Air Staff would also develop the “rapid advance” of the new single Air Service amalgamated from the RNAS and RFC. Key to the problems that would occur later, the new Air Service was to “remain in intimate touch with the Army and Navy by the closest liaison”, regular Navy and Army officers would be “seconded or loaned to the Air Service for definite periods”, and “the Air Staff should from time to time attach to the Army and the Navy the Air Units necessary for naval or military operations....[under] the control of the respective naval and military commands.”⁶ The report concluded “The necessary measures should be defended on the grounds of their inherent and obvious reasonableness and utility, and the desirability of preventing conflict and securing harmony between naval and military requirements.”⁷

Neither the Army nor the Navy agreed with the report but both were forced to agree to the recommendations. Thus, the RAF was formed on 1 April 1918. Smuts’ had envisaged a single service charged with developing the capability of airpower for independent action and meeting the emerging requirements of the sister services. His plan was to promote efficiency and bring airpower under the watchful guidance of air minded experts who would ensure its best utilization across all its current and emerging capabilities. Thus, The RAF may have been an independent service, but it was required to honor the needs of the other two.⁸

⁵ Second Report of the Committee, 5.

⁶ Second Report of the Committee, 6.

⁷ Second Report of the Committee, 6.

⁸ Sweetman, “The Smuts Report of 1917,” 156-171. Also Smith, *British Air Strategy Between the Wars*, 17-19.

The end of WWI in November 1918, coupled with the reduction in the size of the standing Forces and the tensions of policing an empire on a restricted budget, meant Smuts' creation failed fully to meet its remit. Under the direction of Lord Trenchard, the RAF managed to retain its existence as a separate service, but in doing so it had to prove its independence from the Army and Navy.⁹ The Admiralty in particular felt unsupported by the Air Branch of the RAF, particularly when compared to aircraft-carrier development in the US and Japan.¹⁰ Despite the perceived slight, by 1930 the Royal Navy (RN) operated six aircraft-carriers with approximately 150 carrier-capable aircraft flown by the RAF.¹¹ The Army fared slightly better, but air-cooperation squadrons were developed behind bomber and fighter squadrons. Air-land coordination developed by the end of WWI quickly disappeared.¹² In a pattern that has been repeated since, policy to meet national requirement envisaged a joined-up capability, but the reality was that three services worked to maintain their own slice of resources. This led to a separation in thinking, doctrine, and priorities. These failures were to become all too apparent when the services were called upon to act together at the start of World War Two (WWII).¹³

Nott and the Falklands War

In the roughly two decades following the end of WWII, Britain's stature as a world power diminished rapidly. The Labour Government of 1964 heralded a change in ideological perspective from the Conservative

⁹ AP3003, 53-59. Also Smith, *British Air Strategy Between the Wars*, 28-43.

¹⁰ Smith, *British Air Strategy Between the Wars*, 94-103. Also Mark R. Peattie, *Sunburst: The Rise of Japanese Naval Air Power, 1909-1941*, (Annapolis, MD: Naval Institute Press, 2001), 52-76 and Edward S. Miller, *War Plan Orange: The US Strategy to Defeat Japan, 1897-1945* (Annapolis, MD: Naval Institute Press, 1991) 348-350.

¹¹ Maritime history website, <http://www.seayourhistory.org.uk/content/view/461/606/>.

¹² Richard J. Overy, *The Air War 1939-1945* (Dulles, VA: Potomac Books, 1980), 8-12. Also in Smith, *British Air Strategy Between the Wars*, 88-94, and Lee Kennett, *The First Air War 1914-1918* (NY: The Free Press, 1999), 211-216.

¹³ Smith, *British Air Strategy Between the Wars*, 103-105.

government before it. It undertook a series of studies with subsequent policy directives aimed at balancing defense expenditure with national resources, reducing the overcommitment of the fielded forces, and reducing expenditure resulting from the deployment of forces by retrenching.¹⁴ The Mason Review of 1974-1975, continued this trend of trying to make savings by more efficiently meeting closely defined defense needs. The USSR and the Warsaw Pact were seen as the critical threats to UK national security. The Mason Review concluded that “NATO should remain the first and overriding charge on the resources available for defense; that our commitments outside the Alliance should be reduced as far as possible to avoid overstretching our forces; and the general purpose forces should be maintained as insurance against the unforeseen.”¹⁵ The essential commitments were seen as being: the UK’s contribution to NATO front-line forces in Germany, anti-submarine forces in the eastern Atlantic, home defense, and the UK’s nuclear deterrent. The Mason Review was a final recognition that the UK was no longer a world military power and would have to accept the consequences of that realization within the wider politics of the Cold War.¹⁶

The Soviet invasion of Afghanistan in 1979 coincided with the return to government of the Conservatives who, although desirous of a hard line on defense, were fully aware that the nation was struggling financially. In 1981 the Nott Review, conducted by then Secretary of State for Defence John Nott, was undertaken to realign the UK’s armed forces with the realities of the existing financial situation. The UK

¹⁴ Statement on the Defence Estimates 1966 Part 1, 11 February 1966. The UK National Archives CAB/129/124, 11-14.

¹⁵ Statement on the Defence Estimates 1975, 25 February 1975. The UK National Archives CAB/129/181/21, I-8.

¹⁶ “A Brief Guide to Previous British Defence Reviews,” House of Commons Library, International Affairs and Defence Section, SN/IA/5714, 19 October 2010, 6-7. www.parliament.uk/briefing-papers/SN05714.pdf. Also Lawrence Freedman, *The Politics of British Defence, 1979-98* (Basingstoke, UK: Macmillan Press, 1999), 70.

defense policy itself was not under review, the equipment programs created by the previous government to support it were. The Nott Review concluded that balancing commitments with available resources meant making a strategic choice between either the UK's continental or maritime contribution to NATO. It decided to follow the primary NATO threat and concentrate on land and air forces to defeat an invasion of West Germany. This capability would be backed up by a nuclear deterrent. Thus, the Royal Navy took 57% of the cuts in planned expenditure. Embedded within the review was an expectation that the UK would only act as part of the NATO alliance in any expeditionary operations.¹⁷

The impact on the British services from this train of reviews was to separate them firmly from employment as a coherent whole. The UK's withdrawal from worldwide influence to that of a NATO-centric country meant the forces were trained, equipped and organized exclusively to meet the NATO defense of Europe from the Warsaw Pact. The RAF was part of NATO airpower to be employed either as part of NATO deep-strike/interdiction missions or in support of NATO ground forces. It would not necessarily support British forces.¹⁸ In the maritime environment, the RAF was to be utilized as part of the NATO defense against Soviet maritime forces in the Atlantic. The British Army on the Rhine planned for NATO air support if available but increasingly sought to ensure its own integrated support from armed helicopters. Naval aviation had been dramatically reduced in size and capability with the 1978 decommissioning of its last true aircraft-carrier, HMS *Ark Royal*. It was left with rotary-wing, mainly Anti-Submarine Warfare (ASW), capability and Sea Harriers operating from *Invincible*-class "Through

¹⁷ *Statement on the Defence Estimates 1981*, 16 March 1981. The UK National Archives CAB/129/211/11, 1.1-1.12. Also Freedman, *The Politics of British Defence, 1979-98*, 82-83.

¹⁸ AP3003, 241-266.

Deck Cruisers,” and the converted *Centaur*-class aircraft carrier HMS *Hermes*, which provided air defense for the ASW ships.¹⁹

As policy, the UK had decided it would retrench to its core areas and its armed forces would be part of an integrated NATO force rather than an integrated British force. Furthermore, the envisaged major confrontation with the Soviets lent itself to a war of separate domains, the navies fighting in the Greenland-Iceland-UK Gap; the land armies engaged in armored maneuver warfare across central Europe; and the combined air forces attempting to control the airspace while striking second- and third-echelon forces and lines of communication. There was interaction among the elements but in essence they planned to fight separately. There was more rhetoric than substance in any idea that Britain would be operating out of area with NATO let alone on its own. The services competed to ensure they could meet their own obligations. Furthermore, there was little need to consider the effects of diverting resources from one UK service to another, as each service expected that other NATO countries would be able to meet any shortfalls.²⁰

The flaw in the assumptions in the UK defense strategy was evident when Argentina invaded the Falkland Islands on 2 April 1982. Situated 8,000 miles south-west of the UK and 3,500 miles from the nearest piece of guaranteed friendly territory, the Ascension Islands, the Falkland Islands are only 400 miles from the Argentine coast and outside

¹⁹ Defence Committee Proceedings, Session 1997-98, Eighth Report, 3 September 1998. Historical Context para 29.
<http://www.publications.parliament.uk/pa/cm199798/cmselect/cmdfence/138/13804.htm#a8> The term “through deck cruiser” was used to get around the cancellation of new aircraft carriers as part of the Healey Review. These relatively small aircraft carriers, approx. 30,000 tons, were too small to operate conventional fixed wing aircraft but were large enough to accommodate the Harrier Short Take-Off and Vertical Landing (STOVL) fighters.

²⁰ *Statement on the Defence Estimates 1981*, 3.1 – 3.21. Also Mike Smith and Matthew Uttley, “Military Power in a Multipolar World,” in *The Changing Face of Military Power: Joint Warfare in an Expeditionary Era*, (Basingstoke, UK: Palgrave, 2002), 10; and Freedman, *The Politics of British Defence, 1979-98*, 81-83.

of the NATO area of responsibility.²¹ The British had two stark options: either mount an out-of-area expeditionary operation in a predominantly maritime environment, contrary to its planned defense expectations, or surrender the Islands. The Prime Minister considered surrendering of sovereign territory not to be an option. Thus, the services would have to draw something together rapidly, given the impending onset of the South Atlantic winter.²²

The Falklands conflict finished with the Argentine surrender in Port Stanley on 14 June 1982 after a short and bloody campaign. It had been a war in which airpower had played a dominant role on both sides and in all three physical domains: air, land and sea.²³ The British won the conflict, but victory was in many respects based on chance rather than judgment. If more of the Argentine bombs that struck British ships had exploded, there may have been a very different outcome. If one of the air-launched Exocet anti-ship missiles had disabled one of the aircraft carriers or a troop carrying ship before the beachhead had been established, strategic failure would have probably ensued.²⁴ Air support to land and maritime forces was not at the forefront of planner's minds during peacetime as NATO forces would be expected to meet the requirement; integration of planning and communications across the services was difficult as it was unpracticed; elements discussed activities using different terminology, plans were made without the benefit of

²¹ Freedman, *The Politics of British Defence, 1979-98*, 83.

²² Ian Speller, "Delayed Reaction: UK Maritime Expeditionary Capabilities and the Lessons of the Falklands Conflict," 1. <http://eprints.nuim.ie/844/1/Speller.pdf>

²³ Speller, "Delayed Reaction: UK Maritime Expeditionary Capabilities and the Lessons of the Falklands Conflict," 4-6.

²⁴ Tom Clonan, "The Falklands War: Closer Fought Than Commonly Understood," 1 January 2007, 2-4. <http://arrow.dit.ie/cgi/viewcontent.cgi?article=1053&context=aaschmedart&sei-redir=1&referer=http%3A%2F%2Fwww.google.co.uk%2Furl%3Fsa%3Dt%26rct%3Dj%26q%3Dthe%2520falklands%2520war%253A%2520closer%2520fought%2520than%26source%3Dweb%26cd%3D1%26sqi%3D2%26ved%3D0CGoQFjAA%26url%3Dhttp%253A%252F%252Farrow.dit.ie%252Fcgi%252Fviewcontent.cgi%253Farticle%253D1053%2526context%253Daaschmedart%26ei%3DFzOnT5rkIey8QTc6tGrAw%26usq%3DAFQjCNEDjdE5KtThRS9xnWvcBXNmDhqM2g#search=%22falklands%20war%3A%20closer%20fought%20than%22>

different domain perspectives. Airpower played a critical role, but it was not utilized to its full potential. Airpower was bolted onto the plan, rather than built into it.²⁵

Speller notes that “One of the most striking features of the Falklands Conflict is just how little impact it had on the general direction of British defense policy...[the official] *Lessons of the Falklands Campaign* explicitly stated that the defense policy adopted in the 1981 review was extant.”²⁶ The 1985 Statement on the Defence Estimates stated: “NATO commitments will remain our overriding priority; and our ability to act outside the NATO area will be based on ensuring that selected units whose primary roles are within the Alliance can also deploy rapidly at long range in a crisis.”²⁷ Statements to Parliament referring to the Falklands War spoke of improvements to individual platforms or within particular domains. There was some cross-domain development. The enhancement of the Hercules transport improved 5 Airborne Brigade’s ability to deploy to deploy land elements to a crisis.²⁸ But, the overall continuation in policy was summed up in the Lessons document:

The many useful lessons we have learned from the Falklands Campaign...do not invalidate the policy we have adopted following last year’s defence programme review. The Soviet Union – its policies and its military capabilities – continues to pose the main threat to the security of the United Kingdom and our response to this threat must have the first call on our resources. Following the Falklands campaign, we shall now be devoting substantially more resources to defense than had been previously planned. In allocating these, we shall be taking measures which will strengthen our

²⁵ Lawrence Freedman, “Air Power and the Falklands, 1982,” in *A History of Air Warfare*, (Dulles, VA: Potomac Books, 2010), 174.

²⁶ Speller, “Delayed Reaction: UK Maritime Expeditionary Capabilities and the Lessons of the Falklands Conflict,” 9.

²⁷ *Statement on the Defence Estimates, 1985. Part One*, (London: HMSO, 1985), 11 quoted in Speller, “Delayed Reaction: UK Maritime Expeditionary Capabilities and the Lessons of the Falklands Conflict,” 9.

²⁸ Viscount Trenchard, quoted in *The Falklands Campaign: “The Lessons”* Hansard 1803-2005, Lords Sitting, 14 December 1982. <http://hansard.millbanksystems.com/lords/1982/dec/14/the-falklands-campaign-the-lessons-cmnd>

general defense capability by increasing the flexibility, mobility and readiness of all three Services for operations in support of NATO and elsewhere.²⁹

Lessons are unfortunately best learned after failure. By achieving victory in a war for which it was ill prepared, the UK institutionally justified its policy for planning to fight separately but fighting together if necessary. The Falklands campaign did drive improvements in capability of the British Forces, but those remained autonomous actors. Individual services remained committed to fighting separately, with joint operations as a lesser priority. With the national threat defined as it was, this was considered the best option. It was certainly the one the nation could support financially.³⁰

The Strategic Defence Review and the Force for Good

As with the Nott Review of 1981, the Strategic Defence Review of 1997 was preceded by other influential reports. The *Options for Change* report in 1990 was a response to the rapidly changing strategic arena after the sudden end of the Cold War in 1989.³¹ Several officials believed that realigning the defense policy with the new situation would allow for a “peace dividend”. However, only one week after the *Options for Change* paper was published, Iraq invaded Kuwait, precipitating the First Gulf War. Combined with the civil wars in the former Yugoslavia throughout the 1990s, hindsight suggests that the assumptions for *Options for Change* had been flawed. A further review of defense spending led to the *Defence Costs Study* of 1994.³² With its “Front Line First” motto, it represented an attempt to reduce defense spending as much as possible

²⁹ *The Falklands Campaign: The Lessons* (London, UK: HMSO 1983), 35.

³⁰ *The Falklands Campaign: The Lessons*, 36. Also Freedman, *The Politics of British Defence, 1979-98*, 89-92, and Speller, “Delayed Reaction: UK Maritime Expeditionary Capabilities and the Lessons of the Falklands Conflict,” 15.

³¹ Secretary of State (SoS) for Defence, Rt Hon King, statement to parliament 25 July 90, *Hansard*. <http://hansard.millbanksystems.com/commons/1990/jul/25/defence-options-for-change>.

³² SoS for Defence, Rt Hon Rifkind, Statement to the House of Commons, 14 July 94, *Hansard*. <http://www.publications.parliament.uk/pa/cm199394/cmhansrd/1994-07-14/Debate-1.html>

without degrading effects produced by the “front line” forces. The result was swingeing cuts in uniformed support capabilities and a move to a cheaper civilian second and third line where practicable. Both these reviews changed the size of the defense establishment, rather than its practice.

In contrast, the incoming Labour Government in 1997 promised a true, foreign policy-led review, assessing the national interest in the foreseen political climate out to 2015, and directing the military effort to support the resultant scenarios.³³ The *Strategic Defence Review* (SDR) had two main themes:

The need to move towards more rapidly deployable expeditionary forces capable of addressing any potential threat across the full military spectrum and in any location, and the need to co-ordinate the activities of the three Services more closely by pooling their expertise to achieve maximum operational effectiveness, while at the same time eliminating the duplication of resources.³⁴

The heart of the plan was “Jointery”, the harnessing of tri-service capabilities, and the creation of a pool of standby forces termed the Joint Rapid Reaction Forces (JRRF).³⁵ The SDR reaffirmed the UK's commitment to military involvement overseas, both within and outside NATO. In contrast to Cold War planning, it was expected that the UK's armed forces would have to go to its theater of operations rather than have it come to them. The UK was now expecting an expeditionary type

³³ Queen's Speech and Defence Review Press Conference reported in *Strategic Defence Review*, July 1998, Strategic Defence Review Supporting Essay One, The Strategic Defence Review Process, 1.

³⁴ http://www.mod.uk/NR/rdonlyres/65F3D7AC-4340-4119-93A2-20825848E50E/0/sdr1998_complete.pdf

³⁵ “A Brief Guide to Previous British Defence Reviews,” 11.

³⁵ *Strategic Defence Review*, Supporting Essay Eight, Joint Operations, 1-8. Joint Vision was intended to maximize the cost and operational effectiveness of the armed forces through inter-service co-operation or pooling – “Jointery”. The JRRF was a pool of readily available forces from all three Services with a graduated readiness ranging from less than 24 hrs through to 180 days notice to move. The intent was to be able to draw the right force packages from the pool to mount short-notice medium-scale (i.e. brigade size or equivalent) operations of all kinds across the crisis spectrum and under NATO, Western European Union, UN coalition or national auspices.

of operation that was different from confronting a large, single adversary.³⁶

The Secretary of State (SoS) for Defence claimed the SDR was radical.³⁷ However, the theme of SDR was merely to speed up a process begun a number of years earlier. The end of the Cold War and the removal of the massive threat of the Warsaw Pact allowed earlier concepts to become feasible. There were no new threats, just the removal of the major one.³⁸ Joint Force 2000 combined the RN's and RAF's Harriers into a single entity, producing a mixed package able to operate from either land-bases or a carrier. This arrangement mimicked the ad-hoc arrangements of the Falklands War.³⁹ Similarly, the Joint Helicopter Command brought all of the UK's battlefield helicopters under a single organization. This brought together the Navy's support to the Royal Marines, the RAF's Support Helicopter Force and all of the Army Air Corps including, when it was fielded, the Apache attack helicopter (AH). Guiding the development of the JRRF would be the Chief of Joint Operations who, as part of the Permanent Joint Headquarters (PJHQ), would ensure the elements assigned to him were trained to operate coherently.⁴⁰

The SDR provided a concept for the future in an uncertain world. However, as noted by Parliament's Defence Select Committee "Overall, the 'package' designed by the Review and presented in the White Paper should be recognized to be very finely balanced. If any single major element fails to materialize on time, the whole structure could fall into

³⁶ Strategic Defence Review, Introduction, 1-4.

³⁷ Strategic Defence Review, Introduction, 1.

³⁸ Michael Codner, "The Strategic Defence Review: How Much? How far? How Joint is Enough?" RUSI Journal 143, No 4, August 1998, 5-10.

³⁹ Joint Force 2000 married together the RN's air defense variant, the Sea Harrier, with the RAF's ground attack Harrier variant, GR7. When the grouping was finally formed in 2000 it was then called Joint Force Harrier (JFH). In 2006, the Sea Harriers were phased out of service as a cost saving measure with JFH becoming a mixed RAF/RN organization all operating the GR7.

⁴⁰ Strategic Defence Review, Supporting Essay Eight, Joint Operations, 19-32.

disarray.”⁴¹ Programs slipped. The Apache helicopter was one example, but the biggest influence on SDR implementation came from world affairs. At its heart, SDR required an institutional move to think of training and equipping by the individual services to produce tri- service packages acting collectively wherever required. Unfortunately, world events precluded this from happening. The patrolling of “no fly” zones in northern and southern Iraq meant the RAF was extensively involved in purely air operations with the US until the Second Gulf War of 2003.⁴² It was also involved in air-only operations over the Balkans.⁴³ These forces were separated from the British Army’s involvement in the same region that was supported by NATO airpower. In many respects the only aspect of these operations that were Joint was the helicopter force. However, even this element was still predominantly organized along single service lines. The one example of how the JRRF might have operated effectively was the operation in Sierra Leone in 2000 when power was projected from the sea using the Army and Royal Marines in coordination with a mixed-service Harrier and helicopter force.⁴⁴ However, the JRRF concept died after the terrorist attacks of 11 September 2001 and the subsequent invasions of Afghanistan and Iraq by the US with significant UK support. In each of these operations, with the exception of helicopters, Britain’s armed forces reverted to conducting single-service operations within the US structure.

The Defence Sub-Committee noted that, “Even though joint operations are a well-established element of our military doctrine, we conclude that the developments proposed in the SDR will, if realized, represent a real step forward in making jointery an ever present reality in

⁴¹ House of Commons Defence Committee Session 1997-98 Eighth Report, 3 September 1998, Conclusions para 429 <http://www.publications.parliament.uk/pa/cm199798/cmselect/cmdfence/138/13828.htm>

⁴² AP3003, 287-290.

⁴³ AP3003 296-303.

⁴⁴ AP3003 pp307-308.

the structure, doctrine and culture of the armed forces.”⁴⁵ However, this sentiment represented more hope than reality. Despite its good intentions to operate the UK services jointly, the SDR did not actively alter the way the services thought. They remained single- service oriented, albeit they were expected to operate together. The cuts and changes were represented within SDR along single-service lines and, from within the services at the time, each was looked at from a single-service tally of winners and losers. JRRF consisted of single-service packages that would be bolted together when required.⁴⁶ The JRRF construct was based on the idea that each service would strive to ensure all the prescribed building blocks were available. It was the role of the Chief of Joint Operations (CJO) to build the separately trained and organized blocks into a coherent structure for national operations. However, since each of the services considered they would be fighting separately, probably with their US counterpart, CJO had very little influence or ability to create a true JRRF.⁴⁷ The UK military may have been becoming smaller, but the traditional way of organizing things was still being used to meet political requirements.⁴⁸

Reviewing the Reviews

The three reviews described were generated for differing reasons and had different outcomes. The Smuts Report was prompted by operational necessity and sought to maximize the resources available within a single organization. With the UK in a period of financial difficulty, the Nott Review was undertaken to concentrate the forces the

⁴⁵ House of Commons Defence Committee Session 1997-98 Eighth Report, Strategy and Force Structure, para 221 <http://www.publications.parliament.uk/pa/cm199798/cmselect/cmdfence/138/13815.htm#a40>

⁴⁶ *Strategic Defence Review*, Supporting Essay Eight, Joint Operations, para 5-18.

⁴⁷ *Strategic Defence Review*, Supporting Essay Eight, Joint Operations, para 19-21, 29.

⁴⁸ General Sir John Wilsey, witness to the House of Commons Defence Committee Session 1997-98 Eighth Report, para 356.

<http://www.publications.parliament.uk/pa/cm199798/cmselect/cmdfence/138/7121004.htm> also Admiral Todd, para 378. <http://www.publications.parliament.uk/pa/cm199798/cmselect/cmdfence/138/7121006.htm>

country could afford to counter a specific threat. In contrast the SDR was completed during a period of prosperity and sought to free monies for use elsewhere. The SDR freed funds by reorganizing the armed forces. Yet all three reviews sought to enact policy by controlling the means available to the armed forces. The way the services intended to operate remained the same, with each service seeking to maximize its own capability. When world events required the use of force, there remained sufficient means available to allow the traditional ways to meet the ends. As the 20th century transitioned into the 21st, the old paradigm remained valid.



Chapter 2

The Strategic Defence and Security Review

You must see the SDSR not as an endstate but as part of a process. It is not the final word but a stage in the evolving role of our armed forces. It is a waypoint to guide the first stage of transformation.

- Gen Sir David Richards

The Strategic Defence and Security Review (SDSR) was published in October 2010. It represented one of a number of pre-May 2010 General Election promises made by the Conservative Party and was undertaken in parallel with the Comprehensive Spending Review across all aspects of Government. Although the SDSR was completed six months after the election, the work to provide the information that drove the decisions had begun earlier. The official documents underpinning SDSR consisted of the *Strategic Trends* 4th Edition and the *Future Character of Conflict* (FCOC) papers produced by the Defence Concepts and Doctrine Centre (DCDC), and the Green Paper produced by the Ministry of Defence (MoD). The factors underlying the SDSR are revealed in these documents.

The SDSR and its associated National Security Strategy (NSS) define two elements of the “ways plus means equals ends” equation. The first requirement of any Armed Force is to ensure the security of the country. The NSS states how the government perceives the UK’s standing in the world and the measures it believes are required to maintain that position and the influence it brings. It further outlines how the UK will attempt to maintain its prestige. Gaining and maintenance of prestige are vitally important to any state. Gilpin describes prestige as “involving the credibility of a state’s power and its willingness to deter or compel other states in order to achieve its

objectives...[it] is the everyday currency of international relations.”¹ Defending prestige is a necessary part of state interaction. Thus, the NSS plays a key role in understanding the national requirements against which the military establishment will be measured. It defines the ends. The SDSR defines the means. The UK government does not specifically direct how force will be used to achieve the desired ends, this is left purely to the military chiefs. Nevertheless, it maintains control over how much is spent in building the “means” in terms of personnel and materiel. Understanding how to change the ways can only come from an understanding of the means and ends.

The Supporting Documents

Strategic Trends

Strategic Trends document has its roots in the 1998 Strategic Defence Review (SDR). It is an attempt to understand the future potential causes of conflict pertinent to the UK. It draws from a range of international subject-matter experts who attempt to provide degrees of probability of different issues that may require a national response. The 4th edition of *Strategic Trends* was produced to support the MOD *Green Paper* and sought to incorporate developments out to 2040. The current *Strategic Trends* has three key themes:

- The UK will have to adapt to the reality of a climate change and rapid technological innovation;
- The dominance of the West in international affairs will fade, and global power will be more evenly distributed between the West and Asia;

¹ Robert Gilpin, *War and Change in World Politics* (Cambridge, UK: Cambridge University Press, 1981), 31.

- These themes will mean that challenges to defense and security will increase.²

In some respects the *Strategic Trends* document can be considered as saying little new. Its value is in giving valued judgment to the most likely scenarios influencing future national interests. For a cash-strapped nation such as the UK, *Strategic Trends* is a guide to the essential requirements. Unsurprisingly, *Strategic Trends* concludes that the world will not become a more peaceful place. From now to 2040, resource pressures and climate change, coupled with population increases in already unstable areas, are likely to result in increased instability and likelihood of armed conflict. Thus, the UK's desire to secure national interests will require the ability to deploy capable military power to unstable regions. In contrast, total war, and war between liberal democracies will remain unlikely. The document anticipates disagreements between major powers over borders, influence, and resources. It further expects that adversaries will exercise restraint in the methods of warfare, their levels of commitment or the objectives sought. Intra-state war will remain the most common type of conflict. The use of proxies will be likely, and conflict involving proxies and partners of major powers is possible. Furthermore, as evident in Hezbollah's use of anti-ship missiles in 2006, Western armed forces may become involved in coalition action against adversaries possessing significant military capabilities. Thus, Western forces may be forced to fight from positions of near-parity or relative disadvantage. Seemingly unsophisticated adversaries will have ready access to cheap, yet highly effective, technologies. The implication for the UK is that it must employ its armed forces to best effect.³

² *Global Strategic Trends – Out to 2040*. 4th Ed. Strategic Trends Programme. 2 February 2010, 2. <http://www.mod.uk/DefenceInternet/MicroSite/DCDC/OurPublications/StrategicTrends+Programme/>

³ *Global Strategic Trends*, 14-17.

Future Character of Conflict

The FCOC paper is part of DCDC's Strategic Trends initiative that explores what future conflicts may actually look like. The document attempts to predict until 2029. A useful timeline that matches the procurement cycles of most military equipment. As with *Strategic Trends*, many of its deductions are not startling; but they do focus attention.

The FCOC asserts that future conflict will be increasingly hybrid, reflecting the enemy's choice of warfare rather than the UK's.⁴ As already experienced in Iraq and Afghanistan, groups and states cannot directly face the capabilities of a Western military force. The FCOC also argues that the discretionary aspect of UK involvement in future conflicts may be reduced as unrest increasingly impinges upon national interests and, once engaged, it may not always control the manner in which it fights.⁵

The FCOC opines that the UK must consider choices within a defined financial envelope to include the following considerations: quality-versus-quantity of equipment; the level of contribution in coalition/alliance scenarios; scales of effort; and assumptions about concurrency of operations.⁶ The clear implication is that the UK's finances drive the need to think about things differently. It also identifies as flawed the long held idea that the UK could use large regional conflict as a standard from which to address so-called lesser cases.⁷ The character of conflict is changing and the UK approach will have to change with it. It anticipates that the US will continue to be the UK's dominant partner. In turn, the US will increasingly look to partner

⁴ *Future Character of Conflict*. Strategic Trends Programme, 3 Feb 2010, 1.
<http://www.mod.uk/DefenceInternet/MicroSite/DCDC/OurPublications/Concepts/FutureCharacterOfConflict.htm>

⁵ *Future Character of Conflict*, 4.

⁶ *Future Character of Conflict*, 5.

⁷ *Future Character of Conflict*, 15.

states for support.⁸ This reasoning gives license for the UK to organize how best to suit its own needs, particularly as it may have to retain sufficient military capability to conduct an independent military operation in defense of its overseas territories.⁹ Although FCOC does not provide a solution, it does imply a degree of rethinking about how the UK should employ force, including “a cultural shift far more dramatic than that which drove UK Jointery in the 1990s.”¹⁰

Defense Green Paper

The Green Paper published in February 2010, merely three months before the General Election, provided guidance that transcended the political inclinations of whichever party enacted its advice. Unlike the DCDC documents, this was a government-directed document. It thus reflected the official view, albeit guided by subject-matter experts. It was subtitled “Adaptability and Partnership: issues for the Strategic Defence Review.” The paper reflected many of the areas discussed in the DCDC documents and outlined four areas influencing how the UK should develop its armed forces. First, the world had changed politically since the SDR of 1998. The future must conform to a different set of parameters; but, unlike the previous review, this alignment must be made against a backdrop of international rather than self-imposed financial pressure.¹¹ Second, although the armed forces are the ultimate insurance policy, they cannot insure against every risk. Therefore, “the UK must do things differently in the future and prioritize some activities over others.”¹² Third, defense should be conducted in cooperation with

⁸ *Future Character of Conflict*, 33.

⁹ *Future Character of Conflict*, 35.

¹⁰ *Future Character of Conflict*, 37.

¹¹ “Adaptability and Partnership: Issues for a Strategic Defence Review,” The Defence Green Paper. 3 Feb 2010, 5.

<http://www.mod.uk/DefenceInternet/AboutDefence/CorporatePublications/ConsultationsandCommunications/PublicConsultations/TheDefenceGreenPaper2010Discussion.htm>

¹² *The Defence Green Paper*, 6.

international partners.¹³ Finally, “the UK needs to be more adaptable in the manner in which it structures, equips, trains, and generates its forces.”¹⁴ As with the DCDC papers, the Green Paper provided a strong indication that the resources to support increased involvement in future conflicts will be financially constrained, thus requiring alternative ways to meet national requirements.

Unofficial Commentaries

DCDC and the MOD were not the only contributors to the discourse about possible future requirement of UK armed forces. Of note was the research paper, “Shared Responsibilities: a National Security Strategy for the 21st Century”, published in June 2009 by the well-regarded think-tank the Institute of Public Policy Research. Its authors included many established individuals with valued opinions. They provided a slightly different political assessment.

The IPPR report stated that the “black hole” in the defense budget would influence any decisions made within the defense realm.¹⁵ It claimed that globalization and shifts in political power were altering the character of conflicts and breaking down the traditional state dominance of the security environment. Thus, it saw a need for international cooperation and adaptation of institutions in resolving conflicts.¹⁶ Reflecting the make-up of the reports commission, the IPPR prescribed an increasing role for European defense and security cooperation as the way forward. This approach would not be “an alternative to NATO but as a route to reducing absolute dependence on the US while continuing to

¹³ *The Defence Green Paper*, 6.

¹⁴ *The Defence Green Paper*, 6.

¹⁵ *Shared Responsibilities: A national security strategy for the UK*. The final report of the Institute for Public Policy Research Commission on National Security in the 21st Century, June 2009, 14. <http://www.ippr.org/publications/55/1704/shared-responsibilities-a-national-security-strategy-for-the-uk>.

The exact value of this “black hole” was not stated within the IPPR Report. However, government statements made when the SDSR was published indicated a deficit in the Defence budget of £39 Bn.

¹⁶ *IPPR*, 8.

build more effective multilateral institutions as a longer-term project.”¹⁷ This sentiment would eventually be reflected in the SDSR.

The IPPR also recognized that the traditional way of employing military force might not be the optimal way to solve future problems. It recognized that difficult choices had to be made concerning military capabilities, as continuing to maintain a full spectrum was unsustainable and debilitating to the whole; by trying to do everything, nothing would be done properly.¹⁸ Instead, the report suggested, “...a significant rebalancing of UK capabilities against the profile of risks now being faced and much sharper capability specialization for the UK in the light of both the risks and of the resource constraints that are now evident.”¹⁹

Many other commentaries and opinions emerged in the media and academic journals as the SDSR was being developed.²⁰ Many expressed similar opinions to those raised already, but others also came forth. The first, raised amongst others by Michael Clarke in 2008, was the development of the relationship with the US armed forces. Politically, the UK seeks to remain the key partner of the US. Unfortunately, US spending on defense with commensurate technological transformation of its forces leave the UK forces behind. The question of how the UK can possibly hope to provide any form of military influence within this situation was difficult to resolve.²¹ Clarke believed that National pride also had to be addressed.²² Some suggested the only way to balance

¹⁷ IPPR, 11.

¹⁸ IPPR, 47.

¹⁹ IPPR, 51.

²⁰ For example: Timothy Edmunds, “The Defence Dilemma in Britain,” *International Affairs* 86, Issue 2 (March 2010), Greg Mills, “Between Trident and Tristars?” *The RUSI Journal* 155, No 3 (June/July 2010), and Max Hastings, “How Much Defence Can We Afford,” *The Spectator* 19 June 2010. <http://www.spectator.co.uk/essays/all/6084743/how-much-defence-can-we-afford.thtml>.

²¹ Michael Clarke, “The United Kingdom’s Strategic Moment,” in *A Question of Security: The British Defence Review in an Age of Austerity* (London, UK: I.B.Tauris, 2011), 7.

²² Clarke, “The United Kingdom’s Strategic Moment,” 9.

finances with requirements would be to integrate further with Europe.²³ Doing so, these authors claimed, would allow for UK specialization in COIN forces.²⁴ These examples are representative of many others expressing similar ideas, many of whom were retired military officers rooting for their own agenda.²⁵

The National Security Strategy

The National Security Strategy was published the day before the SDSR. Taking into account all the advice described above, it details the yardstick against which the SDSR is measured. Understanding the decisions made in the SDSR is only possible through the lens of the NSS. The strategy recognizes the continuation of uncertainty in the world with no single clear threat against which to plan. This requires an ability to remain adaptable and demands highly capable and flexible forces so the UK can exercise military power when necessary.²⁶ The NSS states that the UK will play an active role in shaping the global future through two complementary objectives: ensuring a secure and resilient UK, and shaping a stable world.²⁷ It significantly anticipates an erosion of American power resulting in an increasingly multi-polar world beyond 2030.²⁸

Within this bigger picture, the NSS describes 15 national security risks, divided into three tiers. Priority for attention, although not

²³ For example, Menzies Campbell and Ben Jones, "No Choice but Change for Britain's Armed Forces," *The RUSI Journal* 154, No 2 (April 2009), 42-48.

²⁴ David Blagden, "Strategic Thinking for the Age of Austerity," *RUSI Journal* 154, No 6 (December 2009), 60-66.

²⁵ Gen Richard Dannett, "Britain is at Stake," *The Telegraph*, 14 September 2010, <http://www.telegraph.co.uk/news/uknews/defence/8001762/General-Sir-Richard-Dannatt-on-the-Strategic-Defence-and-Security-Review-Britain-is-at-stake.html>. Also Gen Lord Peter Guthrie, *BBC News*, 10 March 2010 http://news.bbc.co.uk/2/hi/uk_news/8561124.stm, and Lord Admiral Slater, *BBC News*, 6 July 2010 <http://www.bbc.co.uk/news/10520758>.

²⁶ *A Strong Britain in an Age of Uncertainty: The National Security Strategy*. Oct 2010, 18. http://www.direct.gov.uk/prod_consum_dg/groups/dg_digitalassets/@dg/@en/documents/digitalasset/dg_191639.pdf?CID=PDF&PLA=furl&CRE=nationalsecuritystrategy.

²⁷ *The National Security Strategy*, 21-22.

²⁸ *The National Security Strategy*, 15.

exclusivity, will be given to the top tier, which consists of international terrorism, cyber-attacks, international military crises, and major accidents/natural hazards.²⁹ These, in turn, generate eight complementary security tasks that include:

- Protect the UK and its interests at home, at its border, and internationally, in order to address physical and electronic threats.

- Help resolve conflicts and contribute to stability. Where necessary, intervene overseas, including the legal use of coercive force in support of the UK's vital interests, and to protect UK overseas territories and people.

- Work in alliances and partnerships wherever possible to generate stronger responses.³⁰

The Strategic Defence and Security Review

The SDSR was published on 19 October 2010. Although this review represented a means to address future national strategy, it was firmly placed in the context of the financial difficulties of the global and UK economies. The Foreword of both the NSS and the SDSR emphasized that addressing current and future national risks starts with resolving the budget deficit. Furthermore, the defense budget would play a role in resolving national economic difficulties - “[S]o at the heart of the SDSR are some tough choices to bring the defense budget back to balance.”³¹ When announcing the SDSR to Parliament, Prime Minister David Cameron addressed the theme by emphasizing the £38 Billion of unfunded MOD liability that was greater than the whole 2011 Defence

²⁹ *The National Security Strategy*, 27.

³⁰ *The National Security Strategy*, 33.

³¹ *The National Security Strategy*, 4. Also *Securing Britain in an Age of Uncertainty: The Strategic Defence and Security Review*. October 2010, 4.

http://www.direct.gov.uk/prod_consum_dg/groups/dg_digitalassets/@dg/@en/documents/digitalasset/dg_191634.pdf?CID=PDF&PLA=furl&CRE=sdsr .

budget.³² The result of this financial disparity, clearly stated, would be “painful” choices in the short term.³³

The heart of the SDSR was the formation of an adaptable posture defined as “a way to respond to growing uncertainty: an overarching approach to identify and manage risk before it requires action; maintain a broad spectrum of defense capabilities...able to deter and contain as well as engage on the ground any developing threats; ensure in built flexibility; undertaken with our allies and partners.”³⁴ This posture requires coherent force projection to ensure UK influence wherever it is needed and to “stand up for the values our country believes in.”³⁵ It frequently mentions the continued use of alliances, such as the EU and NATO, as a way to share the burden of military intervention and fill any gaps that occur in the UK’s ability to field a full spectrum of capabilities.³⁶ The US is named as a partner of choice. But noticeably, so too was France, potentially reflecting the opinion that within Europe there are few other countries willing and able to lead.³⁷ The report ensured that while the UK will operate with others, it must retain a capacity for independently defending its Overseas Territories.³⁸

The SDSR stated a need to reconfigure the armed forces to meet requirements within the available budget.³⁹ This force would be able to provide a broad spectrum of integrated and sophisticated capabilities across the maritime, land, and air environments.⁴⁰ This capability was termed “Future Force 2020,” reflecting the year in which all the changes

³² Prime Minister David Cameron, “Statement to the House of Commons on the Strategic Defence and Security Review,” 19 October 2010. <http://www.number10.gov.uk/news/sdsr/>.

³³ *The Strategic Defence and Security Review*. 15.

³⁴ *The Strategic Defence and Security Review*. 10.

³⁵ *The National Security Strategy*, 4.

³⁶ *The Strategic Defence and Security Review*. 16.

³⁷ *The Strategic Defence and Security Review*. 12.

³⁸ *The Strategic Defence and Security Review*. 11-12.

³⁹ *The Strategic Defence and Security Review*. 4.

⁴⁰ *The Strategic Defence and Security Review*. 17-18.

in creating it will be complete.⁴¹ Despite terminology such as maritime and land environment and the creation of a Four-Star Joint Force Commander, the SDSR remained a concept written along single-service lines. It was platform-centric in the way it defined capabilities. The redefinition of commitments and the endurance of operations for planning purposes remained land-force centric and the SDSR particularly failed to account for the air enablers to conduct these operations.⁴² Similarly, the building blocks of Future Force 2020 failed to include the cross-service employment of airpower to achieve effect in the other domains.

The key airpower specifics stated within SDSR were:

In the maritime environment:

- Aircraft carriers to provide part of the ability to deploy airpower from anywhere in the world by 2020.⁴³ The carriers not have aircraft permanently assigned. An air group will be tailored to meet the operational requirement.⁴⁴

In the land environment:

- ISTAR capabilities including the Watchkeeper UAV system.
- Army helicopters including Apache AH for precision firepower and ISTAR in support of ground forces, Wildcat for reconnaissance C2 and escort duties.⁴⁵

⁴¹ *The Strategic Defence and Security Review*. 20.

⁴² *The Strategic Defence and Security Review*. 18-19.

⁴³ *The Strategic Defence and Security Review*. 5.

⁴⁴ *The Strategic Defence and Security Review*. 21-23. The expectation is to routinely embark 12 FJ for operations up to to a maximum of 36. These aircraft will be part of the overall purchase of the Joint Strike Fighter (JSF). When acting as a helicopter platform, the carriers will be capable of handling up to 12 Chinook or Merlin Battlefield Helicopters and 8 Apache Attack Helicopters (AH).

⁴⁵ Wildcat is a small utility helicopter derived from the Lynx family of helicopters and similar in size to a UH-1 Huey.

- Aircraft part of integrated ISTAR network along with warships and submarines.⁴⁶

In the air environment:

- A FJ fleet of two types consisting of Typhoon swing-role fighter and the aircraft-carrier-capable JSF C model to replace the Tornado ground-attack aircraft. The JSF fleet will be operated by a mix of RAF and Royal Navy aircrew. SDSR announced the immediate removal of the Harriers from the inventory signaling a halt in UK carrier FJ operations until the introduction of both JSF and the new aircraft carriers in 2020.

- Strategic and tactical Fixed Wing (FW) airlift to deploy, sustain and recover anywhere in the world and provide airborne refueling.

- RW battlefield mobility from land and sea based upon two helicopter types, Chinook and Merlin.⁴⁷

- C2 capabilities to direct air operations in the UK and overseas centered on the deployable Joint Force Air Component to command multinational forces across a theater of operations.

- Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR) for airborne C2 and surveillance, SIGINT aircraft and complementary Remotely Piloted Air Systems.

- Canceling the updated Nimrod Maritime Reconnaissance (MR) aircraft, leaving a capability gap in FW ASW and ASuW provision.

⁴⁶ *The Strategic Defence and Security Review*, 24-25.

⁴⁷ The SDSR was amended after publication to review who would operate the Merlin Battlefield Helicopter, the Royal Navy for primary support to the Marines in an amphibious role or the RAF for as part of the general provision of helicopters. The Rotary Wing Strategy Document remains unpublished with no decision on who will operate these aircraft announced.

- Gradually withdraw the Hercules, the Puma medium helicopter, the Sentinel surface surveillance system, VC10 air-to-air refueling aircraft, Tristar wide-bodied transport aircraft.⁴⁸

- Reduction of RAF regular-trained strength from 40,800 to 31,500 by 2020.⁴⁹

The Immediate Aftermath

Inevitably, the SDSR raised numerous questions about the justification for its decisions. The Secretary of State for Defence was the first to discuss the review once again emphasizing the financial imperatives.⁵⁰ It was, however, the Chiefs of Staff who provided the more detailed defense and explanation of the SDSR. In an attempt to stop media speculation regarding inter-service squabbling, they sent a joint letter to *The Times* in which they stated, “Faced with meeting today’s challenges and building for the future; that is the balance we collectively struck”⁵¹ General Sir David Richards, the newly appointed Chief of Defence Staff (CDS), gave more detailed explanation of the SDSR from a military perspective in two speeches in November and December 2010.⁵²

⁴⁸ *The Strategic Defence and Security Review*. 25-27.

⁴⁹RAF Strength in 1982 during the Falklands Conflict through to the end of the Cold War in 1991 was 89,700, and in 1998 after SDR it was 54,500. “Defence Personnel Statistics”, House of Commons Library, Social and General Statistics Section, SN/SG/02183, 15 March 2012. <http://www.parliament.uk/briefing-papers/SN02183>.

⁵⁰SoS for Defence Rt Hon Liam Fox. Speech delivered at the Soldiers, Sailors, Airmen and Families Association industry dinner, UK, 25 October 2010. <http://www.mod.uk/DefenceInternet/AboutDefence/People/Speeches/SofS/20101025SsafaIndustryDinner.htm>

⁵¹ UK Chiefs of Staff open letter to *The Times*, 12 November 2010, <http://www.mod.uk/DefenceInternet/DefenceNews/DefencePolicyAndBusiness/ChiefsOfStaffStandBySdsr.htm>

⁵² Gen David Richards, “Securing Britain in an Age of Uncertainty,” Speech delivered at the Policy Exchange, London, 22 November 2010. <http://www.mod.uk/DefenceInternet/AboutDefence/People/Speeches/ChiefStaff/20101122SecuringBritainInAnAgeOfUncertainty.htm> . Also Gen Richards, 11th Annual Chief of Defence Staff Lecture, Royal United Services Institute, London, 14 December 2010. <http://www.mod.uk/DefenceInternet/AboutDefence/People/Speeches/ChiefStaff/2010121411thAnnualChiefOfDefenceStaffLecture.htm>.

The CDS's first speech was titled "Trading the Perfect for the Acceptable." He stated the NSS was regarded as less a strategy and more a "commander's intent," which gave general guidance for where the future lay. He envisaged the SDSR as representing the process to meet that intent that would require modifying along the way in order to adapt to the differences between prediction and reality. He recognized that the character of future conflicts would be different, which would allow forward-looking changes to be enacted. He also noted that the financial situation meant the UK could not afford to do everything that it wanted to do. He opined that when fiscal conditions allowed, the capability gaps would be filled. This was the heart of his concept of trading the perfect for the acceptable. It was also the reason behind the adaptable posture which "retains the ability of the UK to act at distance, independently where required, across all domains, providing the capacity for prevention, for deterrence, both conventional and nuclear, for coercion and intervention". The creation of Future Force 2020 would bring this about.

Assessing the implication of the SDSR

The SDSR is a way of establishing means to meet the ends defined by the NSS. As a fiscally driven measure, it seeks to balance the defense budget in the short and mid-term with an implied expectation that the longer term could be better addressed later. The document, however, talks of reconfiguring and changes, while still remaining firmly wedded to the old way of thinking along service oriented lines. The media reported the Review similarly, describing it in terms of perceived winners and losers. This coverage placed particular emphasis on the gap in carrier-strike capability brought about by the early withdrawal of the Harrier

and the Invincible-class of aircraft carriers.⁵³ References to the role these platforms provided in the 1982 Falkland's conflict persist without any real consideration as to the character of future conflicts.⁵⁴ The SDSR emphasized the need for Jointness in the UK armed forces, but such cooperation is still to be kept within the traditional organization of three services acting separately with an applique of airpower.⁵⁵ Although the equipment budget may have been better balanced, the UK emerged from the SDSR still on the well-worn path of separate services looking after themselves. The UK use of the phrase "Joint" remains a sop to any idea of truly interoperative capabilities across the battlespace, both conceptually and practically. For example, despite its inclusion within JHC, the Army is reticent to define the close-support missions its AH are undertaking in Afghanistan as "close air support" because it is fearful this will open the door to those assets being used by the RAF. The SDSR has led the forces and the public to perpetuate the service tribalism that places the interests of an individual service at the center of the defense debate, rather than better considering how the armed forces as a whole meets society's defense needs.⁵⁶ As an example, the Watchkeeper UAV system is being procured and fielded to meet Army requirements rather than as a system that meets the Army's needs but is part of an air-based ISTAR system that can be employed across the battlespace even in the

⁵³ *The Daily Telegraph*, 19 October 2010, <http://www.telegraph.co.uk/comment/telegraph-view/8074472/Defence-Review-our-Armed-Forces-pay-for-Labours-neglect.html> Also *The Daily Telegraph*, 20 October 2010, <http://www.telegraph.co.uk/finance/newsbysector/industry/defence/8074721/Defence-review-cuts-will-leave-Britain-unable-to-fight-wars-like-Iraq-and-Afghanistan.html> .

⁵⁴ *The Daily Telegraph*, 17 March 2012, <http://www.telegraph.co.uk/news/worldnews/southamerica/falklandislands/9150339/Falkland-Islands-Britain-would-lose-if-Argentina-decides-to-invade-now.html> . Also *The Daily mail*, 5 March 2012, <http://www.dailymail.co.uk/news/article-2110338/Falkland-Islands-lost-Argentina-invaded-warns-commander.html>

⁵⁵ Within the UK, Jointness is the joining together during peacetime of similar capabilities from different services under a single designated command structure. The aim is to streamline common requirements and enhance flexibility. It is also an attempt to reduce costs. SDR created a number of Joint organizations in 1998. An example is the Joint Helicopter Command (JHC), responsible for training, standards, doctrinal development of battlefield helicopters from all services and support for operations. JHC is part of Land Command within the Army structure.

⁵⁶ Paul Cornish and Andrew M. Dorman, "Blair's wars and Brown's budgets," 738.

absence of UK land units. The CDS added to this mentality by talking of the future in terms of contributions by the Army, the Royal Navy, and the RAF as if things would continue to be pursued along the same old lines, just with less equipment.

However, the CDS also raised other ideas within his post-SDSR speeches that open the potential for something different. First, he stated that, “[W]e must now apply ourselves to making a reality of the vision for the future. Achieving this will not be plain sailing and much innovative and radical thinking will be required including being prepared to shed outmoded or irrelevant attitudes and structures.” He also said that “[T]his is about practices and mindset as much as equipment and structures and it will be challenging for all of us and its effects will be enduring.”⁵⁷ With the NSS and SDSR prescribing the ends and means for UK defense, the CDS appears to be amenable to a potential change to the ways the UK’s armed forces operate. This may imply a willingness to consider a paradigmatic shift in the use of airpower.

⁵⁷ Gen Richards, 11th Annual Chief of Defence Staff Lecture, Royal United Services Institute, London, 14 December 2010.

Chapter 3

Two Alternative Paradigms

We must free ourselves of emotional attachments to service systems of an era that is no more.
- President Dwight Eisenhower

If the paper-thin spread of UK capabilities heralds a potential shift in paradigm, what could that mean and what are the possible alternatives? The ubiquitous nature of airpower could make it an ideal candidate to drive such a shift in thinking. It is tempting to look at the US with covetous eyes because it can still continue to operate four separate services, each with its own air contingent. Yet this is to look at the matter without fully appreciating the differences in scale between UK and US forces. One US Nimitz-class carrier has the potential to carry more fast jets than the future RAF and Royal Navy combined will have operationally available.¹ The US Air Force, US Navy, or even the US Army, are no longer realistic role models for meeting the UK's needs. However, two well-regarded and capable institutions may offer a guide to any shift in paradigm in the UK: the US Marine Corps and the Israeli Defence Force/Israeli Air Force. Just as the UK has a historical background as to why its military operates the way it does, so too do the USMC and IDF/IAF. The following chapter details the origins of each of these organizations in order to understand why they vary from the current paradigm before discussing how they vary. By approaching each organization in this way, any ability to carry across their methodology may be better understood.

¹ Elizabeth Quintana, "Austere Air Power? British Air and Space Power in the Post-SDSR Environment," *RUSI Workshop Report*, 2010. http://www.rusi.org/downloads/assets/2010_Austere_Airpower.pdf. Nimitz-class aircraft carrier expects to deploy with at least 60 FJ. The UK currently holds 46 FJ on standby (16 Typhoon and 30 Tornado). This figure will fall to 40 in total when JSF replaces Tornado.

The US Marine Corps

History

The USMC interest in aviation started in 1911 when the Corps sent two officers to learn to fly as part of the wider U.S. Navy pilot-training scheme. The move was prompted by the idea that aviation would be useful in supporting the Marines' newly developing mission for occupation and defense of advance bases for the fleet as the Advance Base Force (ABF).² From the start, Marine Corps aviation was seen as a separate entity from the rest of US Naval aviation and the pilots soon joined up with the rest of the Advance Base Regiment to form the Advance Base Brigade. This Brigade was to become the *raison d'être* for the USMC, created for seizing and holding of bases for the wider US Navy. By implication, it was to be separated from external support, expeditionary in nature, and designed to use all its available resources. Training exercises showed the value of aviation within this concept by providing reconnaissance and scouting, while also presenting a threat to enemy ships. This prompted the purchase of deployable aircraft shelters and a call for all Marine Corps transport vessels which could, to operate at least one aircraft. Development of the mission showed a need to operate land-based planes, as well as sea-based ones, which required training from the U.S. Army's aviators. The need to develop land-based air skills had the potential to spill over into a fight for control over USMC aviation between the Army and the Navy illustrating the difficulty this emergent force had with inter-service politics, operating as it did along the seam of Army and Navy jurisdictions. The Navy, however, ensured the Marine aviators remained firmly within their control and focused all aspects of air support on the ABF mission. By the eve of US involvement

² Edward C. Johnson, *Marine Corps Aviation: The Early Years 1912-1940*, (Washington, DC: GPO, 1977), 1.

in World War I (WWI), the Marine Corps was a fully expeditionary force with integrated aviation.³

Unfortunately, a catalogue of missing equipment, changing roles, and inconvenient location of airfields meant Marine aviation did not directly support the Marines sent to France. A separate unit was formed to augment Navy anti-submarine warfare (ASW) operations in the Azores, while in Europe Marine aviators provided support to the British and Belgian armies. Their sorties were initially as part of exchanges with the RAF and subsequently independently. But none of them were made in support of ground based US Marines who were employed as part of the US-controlled sector of the Western Front. Although successful in what they did, USMC aviators were wedded to the principle of directly supporting their own ground element. Thus, these operations in WWI violated the USMC principle of “Marine first, aviator second.”⁴

The separation of Marine aviation from ground elements during WWI had the potential to split the USMC. When post-war demobilization, budget cuts and the later onset of the Great Depression caused the US Navy to reconsider its priorities, the Marines argued for the aviation arm to remain as part of their structure. The Marines had little expectation that the Navy would release suitable forces when needed. The Marines further argued that only permanent incorporation of the air assets would be effective in combat. Various operational deployments including Haiti, Santo Domingo and Nicaragua showed the value of combining airpower with ground maneuver. This was true for direct support, reconnaissance, casualty evacuation, and air transport.⁵

³ Johnson, *Marine Corps Aviation*, 4-10.

⁴ Johnson, *Marine Corps Aviation*, 11-25. Also Peter B. Mersky, *US Marine Corps Aviation Since 1912*. 4th Ed. (Annapolis, MD: Naval Institute Press, 2009), 1-16, and Kenneth J. Clifford, *Progress and Purpose: A Developmental History of the United States Marine Corps 1900-1970*, (Washington, DC: GPO, 1973), 23-24.

⁵ Johnson, *Marine Corps Aviation*, 35-60.

The final confirmation of organic Marine aviation came with the final decision to discard any ideas of the Marine Corps becoming a limited-scale replica of the U.S. Army. The Fleet Marine Force (FMF), formed in December 1933, was designed to undertake “amphibious warfare in co-operation with naval forces with its major objective the seizure of advanced bases for the fleet.”⁶ The Tentative Landing Operations Manual of 1934 included aviation in every step of an amphibious landing: conducting long-range reconnaissance, providing fighter cover over the transports and landing craft, disabling enemy airfields, neutralizing beach strong points, spotting for artillery, and providing close support to advancing troops.⁷ The mission of Marine Corps Aviation was articulated by the General Board of the Navy in 1939, “Marine aviation is to be equipped, organized and trained primarily for the support of the FMF in landing operations in support of troop activities in the field; and secondarily as replacements for carrier-based naval aircraft.”⁸

During WWII, the USMC fought across the Pacific as integrated air-land units. The absence of dedicated carriers meant most Marine aviation units operated from land bases seized specifically for their use. This produced a reliance on carrier-borne Navy and long-range Army air support to Marine ground units during initial phases of operations that lasted until suitable strips had been seized close to the beachhead. This arrangement had the potential for disaster at Guadalcanal when the Navy withdrew its carriers before the Marines could construct an airfield. This experience still plays a key part in the Marines desire to retain control of their assets.⁹ After WWII, the National Security Act of 1947 endorsed the role of the USMC and the concept of expeditionary

⁶ Johnson, *Marine Corps Aviation*, 61.

⁷ Clifford, *Progress and Purpose*, 58-59.

⁸ Robert Sherrod, *History of Marine Corps Aviation in World War II*, (Baltimore, MD: Nautical & Aviation Pub. Co., 1987), 32.

⁹ Sherrod, *History of Marine Corps Aviation in World War II*, 76-77.

combined arms forces. Thus, the Marine Air Ground Task Force (MAGTF) was born as a recognized entity:

The United States Marine Corps, within the Department of the Navy, shall include land combat and service forces and such aviation as may be organic therein. The Marine Corps shall be organized, trained, and equipped to provide fleet marine forces of combined arms, together with supporting air components, for service with the fleet in the seizure or defense of advanced naval bases and for the conduct of such land operations as may be essential to the prosecution of a naval campaign.¹⁰

The MAGTF concept soon proved itself in combat with the rapid deployment of the 1st Marine Brigade (Provisional) and its associated air wing in the early days of the Korean War. These aircraft and their dedicated support to the Marine infantry became the source of inter-service friction when their operations were deemed by the Army as being more effective than the Air Force in providing close support. The US Air Force assets were also involved in deeper interdiction and air defense missions.¹¹ Further legislation on the structure of the USMC was passed during the Korean War in 1952 when the 82nd Congress enacted Public Law 416, directing that the Corps be organized with three aircraft wings and three combat divisions.¹²

Throughout the 1940s and 1950s, the Marines led the way in developing concepts of employment for the helicopter, using this new technology to move troops and supplies, and evacuate casualties rapidly during the Korean War. These techniques were to be used in the next

¹⁰ *National Security Act of 1947*. Public law 253, 80th Congress: Chapter 343, 1st Session: S. 758, 26 Jul 1947, Sec 206c.
<http://www.google.com/url?sa=t&rct=j&q=national%20security%20act%20of%201947%20original%20text&source=web&cd=1&ved=0CB8QFjAA&url=http%3A%2F%2Fwww.drworley.org%2FNSPcommon%2FEarly%2520Cold%2520War%2F1947%2520National%2520Security%2520Act.doc&ei=BDUjT9qsC5Kftwfx14jGDw&usg=AFQjCNEygf3cpU6ohHo4IJCJJ71-DnQ>.

¹¹ Conrad C. Crane, *American Airpower Strategy in Korea 1950-1953*, (University Press of Kansas, 2000), 28-30, 62, 110-111.

¹² House, Public Law 416, 82nd Cong., 2nd Sess., 1952.
http://www.tecom.usmc.mil/HD/Docs_Speeches/Publiclaw416.htm.

war when the Corps deployed as part of the American support to the South Vietnamese government during the Vietnam War. This war demonstrated the benefits of airpower being developed intimately with land power to meet the task at hand. Unlike the Army, it was able to call upon every facet of rotary-wing transport and attack, fixed-wing transport and attack, as well as airborne electronic warfare and reconnaissance capabilities, all part of an integrated package. Such close cooperation often brought a definite tactical advantage. Attempts by the Air Force and Army to gain influence over Marine Aviation have been made over the years, but each time they have been rebuffed. As a prime example, a single air management system was advocated by the Air Force, exploiting the operations to relieve Khe Sanh, but this idea was gently rescinded over time with an eventual return to the status quo.¹³ Eventually, pressure on the “system” meant the right for the USMC to control its aviation assets was fully accepted by the rest of the armed forces and enshrined in the Joint Publication for Unified Action of 2001:

The MAGTF commander will retain operational control of organic air assets. The primary mission of the MAGTF air combat element is the support of the MAGTF ground element. During joint operations, the MAGTF air assets will normally be in support of the MAGTF mission. The MAGTF commander will make sorties available to the joint force commander, for tasking through the joint force air component commander, for air defense, long-range interdiction, and long-range reconnaissance. Sorties in excess of MAGTF direct support requirement will be provided to the joint force commander for tasking through the joint force air component commander for the support of other components of the joint force or the joint force as a whole.¹⁴

Most recently, the USMC has conducted counter-insurgency operations (COIN) in Iraq and Afghanistan. In each, the Marines have

¹³ Ian Horwood, *Interservice Rivalry and Airpower in the Vietnam War*, (Fort Leavenworth, KA: Combat Studies Institute Press, 2009), 141-171.

¹⁴ Joint Publication (JP) 0-2. *Unified Action Armed Forces*. 10 July 2001, V-4.
http://www.bits.de/NRANEU/others/jp-doctrine/jp0_2.pdf.

taken responsibility for a three-dimensional portion of the battlespace and maintained control within it using all of their available forces. Here they have introduced the tilt rotor V-22 Osprey into operational service. COIN is often considered to be a ground campaign, with air acting only in support. But the Marine Corps would not consider deploying in anything other than an integrated, combined arms MAGTF.¹⁵ Based upon its history, the Corps has found this to be the best way for it to operate.

The Marine Air Ground Task Force

The MAGTF construct makes the Marine Corps different from any other military force. A MAGTF brings a coherent, balanced entity under a single commander.¹⁶ Scaleable in size and equipment it consists of four parts: the Command Element (CE), the Ground Combat Element (GCE), the Aviation Combat Element (ACE) and the Combat Service Support Element (CSSE). The CE provides the C2 support to the MAGTF commander and his force. It can also provide the command function for any Joint or Coalition operation by absorbing other Service or nation's elements. The GCE is organized to conduct ground operations, project combat power, and contribute to battlespace dominance in support of the MAGTF's mission. It is formed around an infantry organization reinforced with artillery, reconnaissance, assault amphibian, tank, and engineer forces. The ACE is organized to conduct air operations, project combat power, and contribute to battlespace dominance in support of the MAGTF's mission. It performs some or all of the six functions of Marine aviation: anti-air warfare, assault support, electronic warfare, offensive air support, air reconnaissance, and control of aircraft and missiles. It is formed around an aviation headquarters with air control agencies, aircraft squadrons or groups, and combat service support

¹⁵ Mersky, *US Marine Corps Aviation Since 1912*, 281-306, 329-363. Also R. Scott Moore, "Rethinking the MAGTF," *Marine Corps Gazette*, June 1992, 20-27.

¹⁶ *Policy for the Organization of Fleet Marine Forces for Combat*. Marine Corps Order 3120.8A, 26 June 1992, 3. <http://www.marines.mil/news/publications/Documents/MCO%203120.8A.pdf>.

units. The ACE and GCE are co-equal within this organization; both exist to provide effects to fulfill the commander's intent. The CSSE provides the logistic support for the whole force linking the deployed MAGTF with national logistic support systems.¹⁷ When viewed as a wiring diagram, the MAGTF appears to be a mini version of the classic Joint Task Force structure, The CE is the JTF command HQ with the ACE, GCE and CSSE the air, land and logistics components respectively.¹⁸ However, the four elements are far more integrated than any components in their outlook and function, as shown in Figure 1.



Figure 1: MAGTF Organization

Source: MCDP1-0 p3-13

Marine Corps manuals describe airpower as a capability supporting the whole of the Force's task as an integrated player.¹⁹ The ACE commander is the MAGTF commander's principal adviser and

¹⁷ Marine Corps Doctrinal Publication (MCDP 1-0. *Marine Corps Operations*. 27 September 2001, 3-11 – 3-15. http://www.fs.fed.us/fire/doctrine/genesis_and_evolution/source_materials/MCDP-1-0_marine_corps_operations.pdf.

¹⁸ Joint Doctrine Publication (JDP) 1-0 *Campaigning*. 2nd Ed. December 2008, 3-1.

http://www.mod.uk/NR/rdonlyres/B875F5EC-B17F-4CA3-BB2D-B418B7B284C0/0/20090219JDP_01_2EdUDCDCIMAPPS.pdf. UK doctrine can include a separate Logistics Component providing the in theatre coordination of logistics support across a deployed force. When involved in wider coalitions, as is the case currently in Afghanistan, this element coordinates all UK national logistics rather than each Service operating separately.

¹⁹ MCDP 1-0, 2-3. Further described in Marine Corps Warfighting Publication (MCWP) 3-2. *Aviation Operations*. 9 May 2000, 1-2 – 2-6. <http://www.marines.mil/news/publications/Documents/MCWP%203-2%20Aviation%20Operations.pdf>.

subject-matter expert on all aviation matters. In effect, the ACE Commander acts as an all-encompassing environmentally specific air component commander (ACC) for the MAGTF and controls the aviation assets using similar processes and tools as a theater Joint or Combined ACC (JFACC/CFACC).²⁰ This structure ensures that all airpower is effectively entwined with all the activities of the MAGTF and explains why removing it would cause serious disruption to the whole operation of the Force. As shown in Figure 2, the ACE include all types of the aviation assets including fixed wing, rotary wing, airborne ISTAR, and electronic warfare (EW) capabilities. The GCE retains none of these assets.

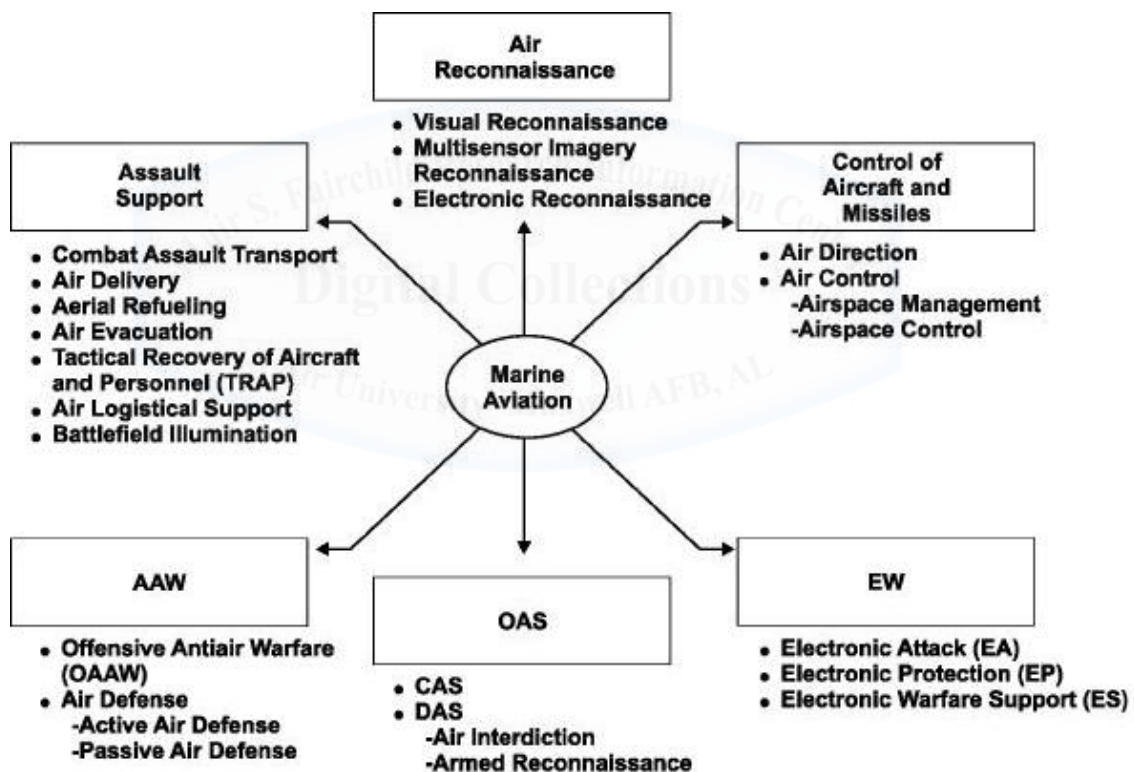


Figure 2: ACE Functions and Responsibilities

Source: MCWP 3-2, 2-2.

²⁰ MCWP 3-2, 4-1 – 4-12, 5-1 – 5-10.

Roles and Tasks for the Future

The Marine Corps expects its future operating environment to be similar to that predicted by the UK's National Security Strategy. In its *Vision and Strategy 2025* the Marine Corps sees that:

Many states will improve their conventional capabilities, and states and non-state actors alike will be able to acquire lethal capabilities. A significant trend is the blurring of what was previously thought to be distinct forms of war or conflict — conventional war, irregular challenges, terrorism, and criminality — into what can be described as hybrid challenges...Hybrid conflicts are assessed as the *most likely* form of conflict facing the United States. Few states, if any, are capable of matching America's overwhelming conventional military combat power.²¹

The document describes six core competencies required to meet this future challenge. These include the expectation of being expeditionary and the ability to undertake integrated combined arms across the range of military operations including as part of a Joint or multinational force.²²

USMC “Ends, Ways, and Means”

The USMC has managed to keep itself separate from the wider inter-service rivalry regarding ownership of assets by concentrating success within a specific mission area. Specific equipment may be different from those fielded by the UK, but in essence the USMC can be considered to have the same “means.” Perceptions of the future operating environment would also appear to be similar, suggesting the ends demanded are equally comparable. The USMC may be orientated toward operations from the sea, but its requirement to deploy to manage crises using military force in support of national goals is definitely the

²¹ *Marine Corps Vision & Strategy 2025*, 12-13.

http://www.onr.navy.mil/~media/Files/About%20ONR/usmc_vision_strategy_2025_0809.ashx.

²² *Marine Corps Vision & Strategy 2025*, 9.

same as the UK's.²³ This leaves the different way of fully integrating all its assets as the major difference between the UK armed forces and the USMC. Some have already proposed the UK should subsume the RAF into the Army, thereby copying the USMC model.²⁴ This would totally misrepresent that model. The USMC way is not to be an expeditionary version of the US Army with an embedded air element. Instead, it is a fusing of co-equal environmental specializations to meet a common tactical purpose. The reputation and demonstrable effectiveness of the USMC suggest there is merit in this alternative model.

Israeli Defense Force/Israeli Air Force

The Israeli Air Force (IAF) has its roots in late December 1947 when a handful of light and medium-sized transports of various types and capabilities were used to support the various Jewish settlements in what was then Palestine. These aircraft would later be augmented by various military airframes in time for the War of Independence.²⁵ In this war, Israeli Defense Force (IDF) was thrust into the complexity of modern combat without the opportunity to develop combined-arms tactics.²⁶ The result was an inability to demonstrate any of the sophistication shown by the belligerents of the recently finished WWII. In essence, Israeli ground, air and naval units fought independently throughout the war.²⁷

In considering how future anticipated wars against the Arab armies would be fought, IDF commanders realized the best chance of victory lay with a doctrine of offensive maneuver on Arab territory. Lack of strategic depth and a limited supply of manpower and arms required

²³ *Marine Corps Operating Concepts: Assuring Littoral Access...Proven Crisis Response*. 3rd Ed. June 2010, 9-11. <http://defensetech.org/wp-content/uploads/2010/06/usmcooperatingconcept.pdf>.

²⁴ Rob Weighill, "Air/Land Integration – The View from Mars" *RUSI Defence Systems*, Feb 2009, 55.

²⁵ Eliezer Cohen, *Israel's Best Defense: The First full Story of the Israeli air Force*, (NY: Orion Books, 1993), 1-60.

²⁶ IDF is a generic term referring to all of the Israeli armed services: army, air force and navy. The Israelis have no separate term for their army; the element is merely referred to as ground forces.

²⁷ David Rodman, "Combined Arms Warfare in the Israel Defense Forces: An Historical Overview," *Defence Studies* 2, No 1 (Spring 2002), 112.

the IDF to fight decisively and with the initiative. The plan was to develop mechanized infantry-centered ground forces who would be the decisive element. The IAF's role was to first gain air superiority before disrupting Arab lines of communication and supporting the ground force through predominantly battlefield air interdiction (BAI). The IAF would provide both kinetic and non-kinetic support to include airdrop of stores and troops as well as casualty evacuation (casevac). The 1956 Sinai Campaign proved this doctrine to be extremely effective. Modified by replacing the mechanized infantry with tank-dominated formations, the plan was spectacularly repeated in the 1967 Six day War when the IAF virtually destroyed the Arab Air Forces on the ground in a pre-emptive raid freeing up aircraft to then undertake BAI and resupply missions.²⁸ Significantly, air superiority over Israel itself ensured that the IDF's own supply lines were never compromised and the Israeli population never threatened. Of even more importance was the gain in territory that gave a previously unavailable strategic depth, particularly in the Sinai. Such a startling demonstration of combined-arms warfare lulled the IDF into a false sense of security for the next war, as it assumed Israel would always be able to take the initiative. This strategic assumption did not, however, account for a change in circumstances.²⁹

The 1973 Yom Kippur War shocked Israeli defense planners. Having created what was effectively a first-strike, offensive doctrine, being caught unprepared by Egypt and Syria caused them great difficulties. Furthermore, the Arabs carefully planned the introduction of mobile air defense systems to negate the effects of Israel's only rapid response capability, the IAF. The eventual overwhelming success of the IDF came as much through errors made by the Arab forces as by IDF

²⁸ The term BAI is no longer included in military doctrine. Up to the late 1990s BAI referred to air sorties in support of the ground commander short of the Fire Support Coordination Line (FSCL) but far away from friendly forces so as not to require direct coordination which remained Close Air Support. Air operations against enemy ground forces and their freedom of manoeuvre beyond the FSCL were termed interdiction.

²⁹ Rodman, "Combined Arms Warfare in the Israel Defense Forces," 113-118.

prowess and capabilities. Post-conflict reflection reconfirmed the solid doctrinal basis of Israeli combined operations. But it also revealed a need to develop other forms of airpower to counter the changes in enemy tactics. In particular, the IAF introduced the attack helicopter to provide flexible direct support to the ground maneuver units whilst freeing its fighter bombers to initially perform the air superiority, interdiction and BAI roles. The IAF also began to develop various forms of UAVs for the reconnaissance and suppression of enemy air defenses (SEAD) role. Furthermore, ground and air units sought to enhance C3I capabilities and the use of Joint Fires to achieve joint effects. This developmental work paid dividends in the successful intervention into Lebanon in 1982, during which the IAF, supported by ground fires, destroyed the Syrian SAM systems in the Bekaa Valley.³⁰

By 1982, the IDF had achieved a regional domination over its neighbors. Its superior joint, combined-arms warfare was a major deterrent to threats of conventional attack. The IAF provided all forms of airpower for the IDF, including the operation of naval helicopters. It was also responsible for continuing to enhance those capabilities to meet the needs of established doctrine. This meant continuing to ensure air superiority over any Israeli battlespace, while expanding influence in the ground environment to include deeper interdiction missions.³¹

After 1982, probably because of its success against successive Arab armies, and further helped by the post-Cold War withdrawal of Soviet support from Arab states, no country directly challenged Israel with a conventional force. The result was a change in strategic doctrine

³⁰ Eliot A. Cohen, Michael J. Eisenstadt, and Andrew J. Bacevich, *Knives, Tanks, and Missiles: Israel's Security Revolution*, (Washington, DC: Washington Institute for Near East Policy, 1998), 35-36. Also Shmuel L. Gordon, "Air Superiority in the Israel-Arab Wars, 1967-1982," in *A History of Air Warfare*, (Dulles, VA: Potomac Books, 2010), 136-155.

³¹ Yoav Ben-Horin and Barry Posen, *Israel's Strategic Doctrine*, (Santa Monica, CA: RAND, 1981), 45-46. <http://www.rand.org/content/dam/rand/pubs/reports/2007/R2845.pdf> Also David Rodman, "The Role of the Israel Air Force in the Operational Doctrine of the Israel Defense Forces: Continuity and Change," *Air & Space Power Journal*, 29 June 2000. <http://www.airpower.au.af.mil/airchronicles/cc/rodman.html>.

leading to the dominance of the IAF within IDF plans, which was incorporated in the “Vulture and Snake” doctrine. Israel would use airpower’s reach and precision to strike at the terrorist threat beyond its borders in coordination with special forces. The IAF would use all variants of fixed- and rotary-wing capabilities, as well as UAVs, to achieve the task. Israeli planners also anticipated that the IAF’s rapid, potent strike capability would deter external intervention. To accomplish the missions, the IAF increasingly became a regular service with only minimal reservist support, which contrasted with the largely reserve-based ground forces.³²

In the absence of an imminent danger from a conventional force, the concentration of the IAF on lesser external threats and the ground forces on internal threats brought an increasing organizational and cultural separation of the IAF from IDF ground forces. This divergence led to the end of close air support as a fixed-wing function and the removal of Tactical Air Control Party (TACP) capabilities from brigades.³³ Simultaneously, the startling effectiveness of airpower in the First Gulf War and the Balkan Wars of the 1990s, and associated infatuation with a so-called “Revolution in Military Affairs” (RMA), led many in Israel and beyond to anticipate the dominance of airpower in future wars.³⁴ The Israeli’s were also attracted to these ideas by the doctrine that

³² Neville Parton, “Israel’s 2006 Campaign in the Lebanon,” *Air Power Review* 10, No 2 (Summer 2007), 82. http://www.raf.mod.uk/rafcms/mediafiles/B0737F9D_1143_EC82_2ED9403BBACBE126.pdf. The in depth study which publically described the “Vulture and the Snake” policy was Shmuel L. Gordon, “The Vulture and The Snake Counter-Guerilla Air Warfare: The War in Southern Lebanon.” *Mideast Security and Policy Studies*, No 39, July 1998. <http://www.biu.ac.il/SOC/besa/publications/39pub.html>.

³³ David E. Johnson, *Military Capabilities for Hybrid War: Insights from the Israel Defense Forces in Lebanon and Gaza*, (Santa Monica, CA: RAND, 2010), 3. http://www.rand.org/pubs/occasional_papers/2010/RAND_OP285.pdf.

³⁴ Tony Mason, “The Air War in the Gulf,” *Survival* 33, Issue 3, May/June 1991, 225. Also Col Drew, “Desert Storm as a Symbol,” *Airpower Journal*, Fall 1992, 6, 13 and Benjamin S. Lambeth, *The Transformation of American Air Power*, (NY: RAND, 2000), 6-7, and David A. Deptula, *Effects-Based Operations: Change in the Nature of Warfare*, <http://www.afa.org/mitchell/reports/0901ebo.pdf>. How the belief in air power by NATO leadership blinkered them from the actualities of applying air power within the Balkans can be found in Dag. Henriksen, *NATO’s Gamble: Combining Diplomacy and Airpower in the Kosovo Crisis 1998-1999* (Annapolis, MD: Naval Institute Press, 2007).

accompanied the provision of high-technology American equipment.³⁵ This produced a reduction in combined air/land training and understanding while the integrated focus of the IDF faded.³⁶ These developments caused significant problems during the Second Lebanese War in 2006. Contrary to expectations, Hezbollah proved to be a high-intensity challenge. In an echo of Egyptian and Syrian planning prior to the 1973 war, the enemy had studied the IDF and exploited its weaknesses.³⁷

The IDF operations in 2006 had noteworthy successes. The management of the airspace within a very tight area in which artillery, fixed- and rotary-wing assets (including UAVs) all operated was exemplary.³⁸ Furthermore, tactical airlift by both fixed- and rotary-wing assets performed admirably.³⁹ Nevertheless, airpower was not used well in the joint fight. Airpower and ground maneuver had been allowed to drift apart thus undermining their effectiveness accrued over the previous 50 years. The removal of fixed-wing aircraft from the close air support role may have seemed prudent, but it removed the fast jet community from the ground battle and separate air and land planning. The result was an inability to act together to achieve strategic effect. The influence of different ways of thinking was exemplified in the attempt to control the attack helicopter (AH) close air support assets centrally. This inappropriate doctrinal solution failed, causing a rift between IAF and IDF ground commanders.⁴⁰

³⁵ Avi Kober, "What Happened to Israeli Military Thought?" *Journal of Strategic Studies* 34, No 5 (October 2011), 716-728. Also Cohen, Eisenstadt, and Bacevich, *Knives, Tanks, and Missiles*, 90-91.

³⁶ Benjamin S. Lambeth, *Air Operations in Israel's War Against Hezbollah: Learning From Lebanon and Getting it Right in Gaza*, (Santa Monica, CA: RAND, 2011), 208-209.

³⁷ Johnson, *Military Capabilities for Hybrid War*, 4.

³⁸ Lambeth, *Air Operations in Israel's War Against Hezbollah*, 83-86.

³⁹ Lambeth, *Air Operations in Israel's War Against Hezbollah*, 126-130.

⁴⁰ Johnson, *Military Capabilities for Hybrid War*, 5-6. Also described in Lambeth, *Air Operations in Israel's War Against Hezbollah*, 110-206.

Change After 2006

The national perception of a poor performance by the IDF in 2006 unnerved the organization from top to bottom. Senior civil and military leaders realized that the force had been allowed to slip from what were widely regarded as world-class standards. The subsequent inquiry, the Winograd Commission, stated that the organization created to uphold the very existence of Israel “was not ready for this war”.⁴¹ Correcting this mistake started with a reappraisal of the wars Israel was expected to fight. Prior to the 2006 operation in Lebanon, Israel had announced it would commence its own series of Quadrennial Defense Reviews. The first, the Kushet or Rainbow Plan, sought to direct planning and defense spending through 2011, optimizing the IDF for low-intensity, urban, and asymmetric warfare without compromising its conventional edge.⁴² The experience in Lebanon changed the emphasis of this idea, as shown in the Teffen Plan 2012, published in September 2007. The plan described four challenges against which it would develop forces: symmetric operations against an advanced regular army; asymmetric operations against paramilitary forces and terror organizations; a nuclear-armed Iran; and regional instability. Forces would be adjusted to meet these requirements within fiscal constraints and realities. A notable change in direction was the emphasis the plan placed upon regaining an effective ground maneuver capability based on modern tanks and other armored fighting vehicles supported by attack helicopters, low altitude UAVs and transport aircraft. The ground forces would receive the majority of the funding. Having been favored by the “Vulture and the Snake” policy, the

⁴¹ Israel Ministry of Internal Affairs press release for Winograd Commission interim report 30 April 2007, para 19, <http://www.mfa.gov.il/MFA/Government/Communiques/2007/Winograd+Inquiry+Commission+submits+Interim+Report+30-Apr-2007.htm> accessed 24 Apr 12. This sentiment is reflected in the press release of the full report 30 January 2008, <http://www.cfr.org/israel/winograd-commission-final-report/p15385> accessed 24 Apr 12. The report itself remains classified.

⁴² Anthony H. Cordesman, Aram Nerguizian and Ionut C. Popescu, *Israel and Syria: The Military Balance and Prospects of War*, (Westport, CT: Praeger, 2008), 3.

IAF was in good condition to meet the amended policy. Reductions of IAF funding would limit enhancement in already-acquired capabilities. This meant that the procurement of 100 F-35 Joint Strike Fighter aircraft was reduced to 25, with a possible additional 25 in the future. In lieu of the unavailable F-22 Raptor, the in-service F-15 A/Bs would be upgraded. C-130 Hercules upgrades would be cancelled. New air-to-air refueling tankers would not be purchased, but the current KC-707s would be modernized. Plans for an additional squadron of 24 Apache AH-64D were reduced to six, bringing the in-service total to 24. Procurement of UAVs, however, continued with additional Heron Medium Altitude Long Endurance (MALE) vehicles supplemented by the new Eitan high altitude HALE UAV.⁴³ But, changes in procurement could not solve warfighting problems. This would require having air and ground forces working together. Air Liaison Officers (ALOs), fully supported with networked capabilities, were again assigned to ground forces. Simultaneously, flexible C2 of AH was introduced. The empowered ALOs ensured the AH, along with all other IAF assets, would be used to best effect. Finally, large-scale joint training exercises were reintroduced to develop air-ground coordination and understanding. The success of these reforms was demonstrated in 2008 during Operation Cast Lead, in the operations conducted in and over the Gaza Strip.⁴⁴

Implications

Israel's armed forces were created 65 years ago from virtually nothing. Without the heavy weight of tradition to hamper them, they

⁴³ Alon Ben-David, "IDF Unveils 5 Year Plan to Boost Capabilities," *Jane's Defence Weekly*, 12 September 2007.
http://www4.janes.com/subscribe/jdw/doc_view.jsp?K2DocKey=/content1/janesdata/mags/jdw/history/jdw2007/jdw34069.htm@current&Prod_Name=JDW&QueryText=%3CAND%3E%28%3COR%3E%28%28%5B80%5D%28+teffen+%3CAND%3E+2012%29+%3CIN%3E+body%29%2C+%28%5B100%5D+%28%5B100%5D%28+teffen+%3CAND%3E+2012%29+%3CIN%3E+title%29+%3CAND%3E+%28%5B100%5D%28+teffen+%3CAND%3E+2012%29+%3CIN%3E+body%29%29%29%29. Also in Cordesman, Nerguizian, and Popescu, *Israel and Syria*, 88-91.

⁴⁴ Lambeth, *Air Operations in Israel's War Against Hezbollah*, 222-268.

became highly respected and capable forces organized along environmental lines. The IAF operates all air platforms on behalf of the IDF, including those operating in the maritime environment and all UAVs other than the very small platoon-level vehicles. Despite degeneration when the focus of the IDF's focus became blurred from the late 1990s and through to 2006, the IAF successfully developed the use of all aspects of airpower as a coherent service meeting the nation's requirements.

The period between the First Gulf War, 1991, and Israel's Second Lebanese war, 2006, when the IDF lost perspective, is of real significance to the UK's future consideration of airpower. As noted above, the IAF was unduly swayed by the potential dominant role of airpower allowed by the introduction of very precise effects. The US drove the development of doctrine to maximize the potential of this way of warfare. In adopting much of the American way of warfare, the IDF, and in particular the IAF, failed to adapt US ideas to their own circumstances. The result was embarrassment against a small but capable enemy. To the IDF's credit, it rapidly adjusted its outlook ensuring that airpower once again became a flexible entity that could meet the Joint Commander's intent.

IDF/IAF Ends, Ways and Means

Like the USMC, the IDF/IAF way is a product of its history. Created after WWII when airpower had already been shaped into one paradigm, it chose a different model to serve its purpose unencumbered by service tradition. With each service responsible for the application of a particular environmental specialty, it has for the most part ensured that the national requirements, the ends, have been best met through the effective use of force. The means have been normally balanced to ensure the best possible mix. The process has not always been perfect,

as shown in 1973 and 2006. But on both occasions the IDF has subsequently recovered and reformed to its underlying construct.



Chapter 4

A New Paradigm?

We must now apply ourselves to making a reality of the vision for the future. Achieving this will not be plain sailing and much innovative and radical thinking will be required including being prepared to shed outmoded or irrelevant attitudes and structures.

- Gen Sir David Richards

The Current Paradigm's Ends, Ways, and Means

In his discussion on scientific revolutions, Thomas Kuhn describes how individuals work to develop new ways of understanding while clinging to existing paradigms. Eventually, a better way of explaining observed phenomena is accepted by the wider body of experts and this idea or theory becomes the new paradigm. Over time, further research explores related areas using that paradigm as the reference point.¹ For the UK, as with the US, the accepted paradigm for its armed forces is for independent service entities to organize themselves separately, while each uses organic airpower to enhance the effects it seeks to produce. Cross-service support can and does occur when requested to provide capabilities that cannot be implemented organically. The provision of fixed-wing close air support to the Army is a prime example. This paradigm leads to each service pressing for its own way of winning conflicts, thus generating intense competition when resources are scarce. The existence of three separate future operating concepts, which consider the same strategic problem from three independent directions

¹ Thomas S. Kuhn, *The Structure of Scientific Revolutions*. 3rd Ed. (1962; repr., Chicago: Chicago University Press, 1996), 10-22.

bears this out.² This leads to inevitable duplication of capability, as each service champions its own interest.

The current paradigm is best understood from the aspects of ends, ways, and means. The ends are the national security requirements for which military action is desired. The ways have become entrenched, leading to three services competing for resources for their particular ways of warfare. This leaves the means as the principle method for governments to control spending. Provision of platforms becomes key to service interests, albeit how those items should be employed together is of less interest. General Sir Peter Wall, the UK Chief of the General Staff (CGS), describes this as the innate service drive and wish for “Big Navy, Big Air Force, and Big Army.”³ In the UK, some resource merging occurred under the Strategic Defence Review (SDR). The emergence of various Joint organizations such as Joint Force Harrier are examples, but these initiatives have been more administrative rather than an integration of airpower effects.⁴ The Joint Helicopter Command (JHC) was a further step in seeking better utilization of an under-resourced capability. But even this only covered Battlefield and Attack Helicopters, rather than encompassing all helicopter roles. Nevertheless, when the means remain sufficient for the way to meet the end, there is little need for change.

Paradigm Failure Through Lack of Means

Kuhn describes the crisis that occurs in new circumstances, in which the accepted paradigm no longer produces satisfactory answers. It

² These consist of the *Future air and Space Operational Concept* (FASOC), the *Future Land Operational Concept* (FLOC), and *Future Maritime Operational Concept* (FMOC).

³ Gen Sir Peter Wall (Chief of the General Staff), interview by the author, 20 February 2012.

⁴ Ministry of Defence, *Strategic Defence Review Supporting Essay Eight – Joint Operations*, (London: HMSO, 1998). Joint Force 2000 did morph into a far more integrated organisation as Joint Force Harrier with the early demise of the Sea Harrier as a cost saving measure by the Royal Navy. However, the intent remained to consider this as two separate entities working very closely together through necessity rather than choice.

is then no longer feasible to adjust the paradigm; instead it is time for a new one. Few in the scientific community actually look for the new theory; they merely come to the point where the old one no longer works.⁵ For the airpower paradigm and for the employment of the UK's armed forces in general, fiscal pressure has fundamentally changed the circumstances.

The Strategic Defence and Security Review (SDSR) has been significantly criticized. Many argue the review was accomplished too hastily, but this criticism tends to be motivated more by political bias than genuine substance.⁶ More effective criticism has raised doubts over the strategy contained in the strategic review. Paul Cornish in particular has been forthright in explaining why the SDSR fails to meet the requirements of the National Security Strategy (NSS).⁷ In trying to place airpower described in the SDSR within the way the UK military operates (the current paradigm), it is difficult to disagree with Cornish. With the forces left after the SDSR, it would be impossible to retake the Falkland Islands should Argentina seek a decision by force of arms.⁸ Furthermore, once the reductions in equipment and manpower have

⁵ Kuhn, *The Structure of Scientific Revolutions*, 66-76.

⁶ For example, Defence Committee Proceedings, Session 2010-11, First Report, Conclusions and recommendations, 7 Sep 2010.

<http://www.publications.parliament.uk/pa/cm201011/cmselect/cmdfence/345/34503.htm>. Also, The Phoenix Think Tank, <http://www.phoenixthinktank.org/analysis/defence-review-policy/>

⁷ Paul Cornish, "UK Defence: A Test Case," *The World Today* 67, no. 5, (May 2011): 4-6. Also Paul Cornish and Andrew M. Dorman, "Dr Fox and the Philosopher's Stone: the alchemy of national defence in the age of austerity," *International Affairs* 87, Issue 2 (March 2011): 335-353, and Trevor Taylor, "What's New? UK Defence Policy Before and After the SDSR," *The RUSI Journal* 155, no. 6 (December 2010): 10-14.

http://www.chathamhouse.org/sites/default/files/public/International%20Affairs/2011/87_2cornish_dorman.pdf.

⁸ For example, in 1982, the UK utilized 23 frigates and destroyers in direct support to the Falkland Islands conflict (Falklands Campaign: The Lessons), post-SDSR the UK will have 19 frigates and destroyers in total (Lee Willett, RUSI, <http://www.rusi.org/analysis/commentary/ref:C4D4C20CB26473/>). During the initial operations in Iraq in 2003, the RAF deployed 30 Tornado and 18 Harrier ground attack aircraft plus 14 Tornado air defence fighters and 6 Nimrod maritime patrol aircraft (http://en.wikipedia.org/wiki/Operation_Telic_order_of_battle), post-SDSR the UK has 30 Tornado ground attack aircraft and 16 Typhoon fighter/ground attack aircraft available to deploy, it has no maritime patrol aircraft.

been made, the UK will not be able to engage in operations similar to the recently concluded Libya campaign.⁹ Adm Sir Mark Stanhope, the UK's First Sea Lord (equivalent to the U.S. Navy's Chief of Naval Operations), confirms the opinion of all the Chiefs of Staff that the UK no longer possesses a full-spectrum capability.¹⁰ The UK armed forces are already assuming significant risk. The capability gaps in maritime surveillance and fixed-wing ASW announced in the SDSR reflect these issues. Furthermore, operations in Libya involved aircraft capabilities, Sentinel and Nimrod R1, which will be removed and not immediately replaced in the near future.¹¹ Everett Dolman claims that each service should use airpower to win the battle of its domain, but the UK can no longer afford to do this.¹² US forces are unrivalled in their use of airpower, and able to tap into a well of resources that has left all other nations behind. The US retains the ability to excel within the current paradigm. Unfortunately, the UK has reached a point at which its accepted paradigm no longer produces effective results. It is now forced to look through a lens of reduced size and fiscal pressure.

Returning to the ends, ways, and means described above, if the ends and ways remain the same, the reduction in means puts pressure on the use of the ways to meet the ends. Although the SDSR was merely one of a series of reductions over time, it signaled the point at which the means can no longer support the extant ways of meeting the desired

⁹ Adm Sir Mark Stanhope (First Sea Lord), interview by the author, 17 February 2012. Also Air Chf Mshl Sir Stephen Dalton (Chief of the Air Staff), interview with the author 22 February 2012.

¹⁰ Author's interview with First Sea Lord, 17 Feb 12. Also in *Examination of Witnesses*, Defence Committee Proceedings, Session 2010-11, Sixth Report, 20 July 2011. The Strategic Defence and Security Review. <http://www.publications.parliament.uk/pa/cm201012/cmselect/cmdfence/761/11051102.htm>.

¹¹ *Securing Britain in an Age of Uncertainty: The Strategic Defence and Security Review*. October 2010, 27.

http://www.direct.gov.uk/prod_consum_dg/groups/dg_digitalassets/@dg/@en/documents/digitalasset/dg_191634.pdf?CID=PDF&PLA=furl&CRE=sdsr For reference, Sentinel is an airborne surface surveillance radar system similar in concept to the US JSTARS. Nimrod R1 is a SIGINT platform utilising the same aircraft as the Nimrod MR.

¹² Everett C. Dolman, *Pure Strategy: Power and Principle in the Space and Information Age*, (Abingdon, UK: Frank Cass, 2005), 34-35.

ends. With the means now the limiting factor, it is necessary for either or both the ways and ends to be adjusted in order to balance the ends, ways, and means equation. The categorical statements of intent for balancing the UK defense budget within the NSS, SDSR and other statements by the government, make very clear that there is no chance of an increase in spending in the foreseeable future.¹³ Kuhn's description of a point at which the old way of explaining things no longer seems to marry with empirical observation has arrived for UK armed services.

Changing the Ends?

The SDSR and NSS straightforwardly describe the UK's national ends. They both call for a proactive approach to ensure the UK's interests are met in an uncertain world, and they remove any potential for the country retiring from its historical role as a leader in international affairs. The national ends are summed up as: "Our country has always had global responsibilities and global ambitions. We have a proud history of standing up for the values we believe in and we should have no less ambition for our country in the decades to come,"¹⁴

Although these statements appear to signify no change from the past, a close examination of the background documents that drove them reveals the potential for change. In effect, the threat previously facing the UK is no longer there. During the Cold War, the UK understood that being able to contribute to the collective NATO response to invasion of Western Europe was its biggest and most important priority. However, as partly recognized in the SDR, and fully articulated in the SDSR and NSS, the potential for the most dangerous possibility today-inter-state

¹³ *A Strong Britain in an Age of Uncertainty: The National Security Strategy*. Oct 2010, 5. http://www.direct.gov.uk/prod_consum_dg/groups/dg_digitalassets/@dg/@en/documents/digitalasset/dg_191639.pdf?CID=PDF&PLA=furl&CRE=nationalsecuritystrategy . Also *The Strategic Defence and Security Review*, 9; and Prime Minister David Cameron's statement to the House of Commons on the Strategic Defence and Security Review, 19 October 2010. <http://www.number10.gov.uk/news/sdsr/>.

¹⁴ *The Strategic Defence and Security Review*, 3; see also *The National Security Strategy*, 21.

warfare involving peer-level, force-on-force combat- is highly unlikely. Any rise of a threat in this category should be identified sufficiently early to allow for a change in force levels.¹⁵ Any involvement in a conflict of choice involving this degree of force and commitment will most likely be undertaken with the US, as happened in Iraq and Afghanistan. The advantage of choosing to fight in these situations is the ability to match one's contribution with one's own way of operating. If the UK is to maintain its prestige and influence, it will be expected to deploy and be effective in smaller-scale influence operations. The potential for large-scale conflict with a peer-competitor may still exist, but it has now become remote. *Strategic Trends*, *The Defence Green Paper*, and *the Future Character of Conflict (FCOC)* suggest that the actual priority for the future force is to be coherent at small and medium efforts against either non-state or state actors in limited conflict.¹⁶ The recent intervention in Libya serves as a useful model of the scale and type of activities envisaged. It would thus seem productive to change the dominant requirement for military activity from the most dangerous to the most likely conflict scenarios. While this may appear to be a high risk approach, it remains a logical extension of Gen Richards "Trading the Perfect for the Acceptable" speech.¹⁷ To remain secure in a world of uncertain and unpredictable threats requires the services to operate,

¹⁵ *Strategic Defence Review*. July 1998 para 22-31. http://www.mod.uk/NR/rdonlyres/65F3D7AC-4340-4119-93A2-20825848E50E/0/sdr1998_complete.pdf. Also the *National Security Strategy*, 18, and *The Strategic Defence and Security Review*, 37, 43-44.

¹⁶ *Global Strategic Trends – Out to 2040*. 4th Ed. Strategic Trends Programme. 2 Feb 2010, 13-14. <http://www.mod.uk/DefenceInternet/MicroSite/DCDC/OurPublications/StrategicTrends+Programme/>. Also "Adaptability and Partnership: Issues for a Strategic Defence Review," *The Defence Green Paper*. 3 Feb 2010, 14. <http://www.mod.uk/DefenceInternet/AboutDefence/CorporatePublications/ConsultationsandCommunications/PublicConsultations/TheDefenceGreenPaper2010Discussion.htm>, and *Future Character of Conflict*. Strategic Trends Programme, 3 Feb 2010, 14. <http://www.mod.uk/DefenceInternet/MicroSite/DCDC/OurPublications/Concepts/FutureCharacterOfConflict.htm>.

¹⁷ Gen David Richards, "Securing Britain in an Age of Uncertainty," (Speech, Policy Exchange, London, 22 November 2010). <http://www.mod.uk/DefenceInternet/AboutDefence/People/Speeches/ChiefStaff/20101122SecuringBritainInAnAgeOfUncertainty.htm>.

train and organize. With the means as limited as they are, a new understanding of what the ends actually represent gives greater latitude to changing the ways.

Changing the Ways

The current paradigm is wasteful of air resources because it restricts the ability to shift assets across the battlespace to where they are most needed. Furthermore, the paradigm creates a way of thinking in peacetime that divides assets into particular environments. Considering platforms as either “ours” or “theirs” prevents a holistic utilization of increasingly scarce airpower capabilities. It also tends to restrict capabilities to particular environments. The two alternatives previously described, the US Marine Corps (USMC) and the Israeli Defence Force/Israeli Air Force (IDF/IAF), reverse the paradigm by bringing all airpower capabilities under the control of a single entity which, in a way that emulates the thinking of Jan Smuts in 1917, by putting airpower capabilities in the hands of an airpower specialist for the common good.¹⁸ From a UK perspective, both models have pros and cons.

The USMC and the UK Model

As a single, fully integrated force, the USMC model represents the more significant departure from the current paradigm. The benefit of integrating air assets into the deployed MAGTF is its potential to fully utilize what is available. Such integration focusses all effort on achieving effects rather than on any particular way of accomplishing the mission. All elements are part of one team.¹⁹ This way of thinking, inherent in the USMC psyche, means elements are integrated doctrinally and

¹⁸ Second Report of the Committee on Air Organisation and Home Defence Against Air Raids. 17 Aug 1917. The UK National Archives CAB/24/22, 5-6.

¹⁹ *Marine Corps Operating Concepts: Assuring Littoral Access...Proven Crisis Response*. 3rd Ed. June 2010, 3-4. <http://defensetech.org/wp-content/uploads/2010/06/usmcoperatingconcept.pdf>.

conceptually. The result is that equipment and systems are considered, procured, and introduced under a construct of operating together. Interoperability across the force ensures the MAGTF scalable concept works at short notice to meet any challenge. The following diagram depicts how the USMC model for its total force can be brought together for different scales of mission within different readiness states:

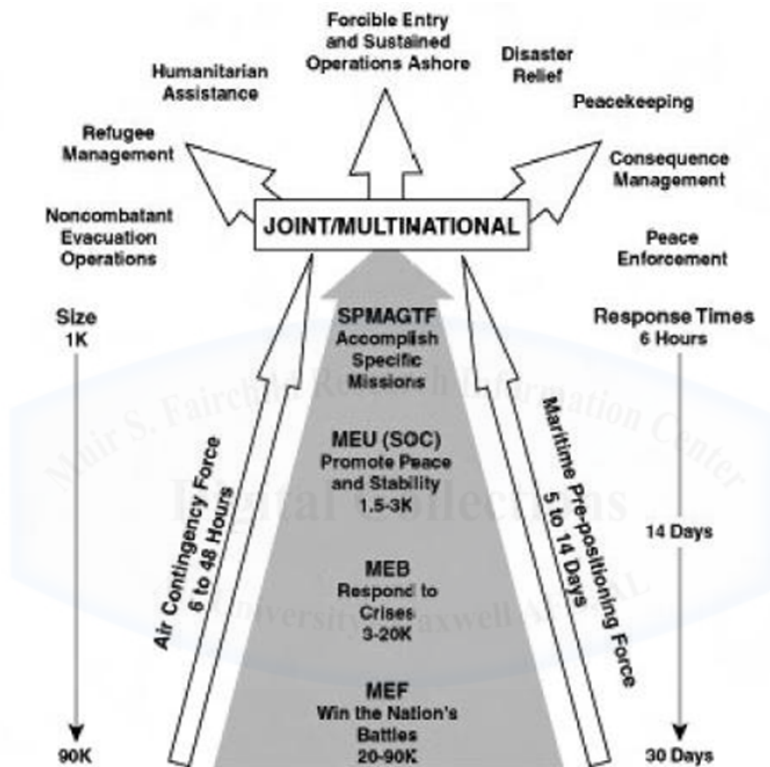


Figure 3: USMC Scales of Effort and Response Times for Deployment.

Source: MCDP 1-0 p2-12.

The USMC concept for airpower similarly avoids duplication of resources and effort. Equipment is procured to meet the requirements of the mission and operated by the pertinent element, ground or air; there

is no competition between the two as they are both part of a single team. The MAGTF ensures the most is made of what is available.²⁰

The above description depicts a deployable force achieving expeditionary effect. The Marine Corps has spent many years enhancing how to harness all capabilities to meet its mission. But, in considering this model as a new paradigm for the UK armed forces, there other issues must be addressed.

The MAGTAF is tactically focused on a single area of operations. This is not a problem for the US because the Army, the Navy, and the Air Force operate on a broader scale.²¹ A MAGTF is configured to meet an operational mission which may not represent the entire strategic requirement. As an example, Marine aviation is required to provide air superiority over the MAGTF but it is not capable of doing so over an entire theater. Similarly, the MAGTF exists to project power from the sea, but it still requires the Navy to secure the sea itself and transport it to the scene of action. The MAGTF can operate in its own part of any conflict, but it does so as part of a wider and larger military system. Furthermore, UK services have single-environment prescribed tasks that the USMC will never be called upon to provide, to include the air defense of the UK and the submarine-based nuclear deterrent.²² These missions could perhaps be incorporated within a USMC concept of airpower, but doing so would require independence for certain areas. While not insurmountable, the situation would probably lead to the development of independent forces and the subsequent degradation of the coherence of a USMC-type model.

²⁰ Expeditionary Maneuver From the Sea: The Capstone Operational Concept. USMC, 25 Jun 2008, 2-4. http://www.google.com/url?sa=t&rct=j&q=expeditionary%20maneuver%20from%20the%20sea&source=web&cd=1&ved=0CCMQFjAA&url=http%3A%2F%2Fwww.quantico.usmc.mil%2Fdownload.aspx%3FPath%3D.%2FUploads%2FFiles%2Fsvg_002_USMC%2520Capstone%2520Concept.pdf&ei=NT2jT-C7Iojq8wSlt81X&usg=AFQjCNHzuB3LIOZVBVmZg78knYZB8_pmCw.

²¹ Rob Weighill, "Air/Land Integration – The View from Mars," *Royal United Services Institute Defence Systems*, February 2009, 53-56.

²² *The Strategic Defence and Security Review*, 21, and 25.

Second, the USMC has no inherent inter-service rivalry or environmental prejudice, because it is effectively a single-service operating within its own carefully defended and nurtured niche of the current paradigm. It has no history of its constituent parts being separate entities. The only Western nation that has tried to unify its armed forces is Canada in 1968. This move was not made to bring the Canadian Forces into a single operating unit but as a way for the Minister of Defence Paul Hellyer to gain control over three very independent services. This intent was reflected in the major themes of the legislation:

- The need for a single coherent defence policy for Canada;
- The creation of the office of the Chief of the Defence Staff (CDS) to centralize and strengthen the administration and control of defence policy and of the CF;
- The creation of a unified system of command complete with the reorganization of the field commands;
- The introduction of modern management methods and the elimination of triplicate functions to achieve efficiencies;
- The achievement of a single higher loyalty to the Canadian Forces.²³

The benefits Canada had hoped to achieve through unification are already in place within the UK system. The policy change was unpopular in Canada at the time. Furthermore, although still officially part of a single structure, service-specific uniforms were reintroduced in 1986, and single-service chiefs appointed in 1997.²⁴ For a country like the UK, whose services have very proud and long traditions, unification would be badly received and offer little benefit. The UK would appear to be better served by a single defense structure with separate elements responsible

²³Daniel Gosselin, "Hellyer's Ghosts: Unification Of The Canadian Forces Is 40 Years Old – Part One," <http://www.journal.forces.gc.ca/vo9/no2/03-gosselin-eng.asp>.

²⁴ The Canadian Encyclopedia, <http://www.thecanadianencyclopedia.com/articles/armed-forces> .

for different aspects of military capability. The USMC works within that structure, rather than representing how the whole military organization should or could be modeled.

Third, and most significantly, the root problem with the USMC model is that it addresses a tactical-, and perhaps operational-, level need. The NSS and SDSR reiterate the UK stance that it regards itself as being able to operate at both the operational and strategic-levels of war.²⁵ The USMC MAGTF does not provide this capability. When viewed from these higher levels of war, it becomes apparent that the MAGTF fits within the current paradigm of separate services operating in their own environments rather than any new paradigm that is plausibly applicable to the UK. There may be some benefits for the UK in incorporating some of these ideas, but the USMC model does not really meet national security requirements.

THE IDF/IAF and the UK model

With a defense establishment slightly larger than the UK's, the IDF illustrates another way of using air, ground and maritime forces.²⁶ Dividing its forces along environmental lines, it eliminates duplication of effort and provides for effective cooperation. Threats to the nation are considered holistically; and the responses coordinated to use the benefits of air, land, and sea power within resource constraints. As noted in the policy adjustments recommended by the Teffen 2012 plan, Israel cuts its financial cloth to meet the desired capability. The ability of the IDF as a whole, rather than any particular environment, to meet its objectives is the key.²⁷

²⁵ *The National Security Strategy*, 4. Also the Strategic Defence and Security Review, 11-12.

²⁶ In 2011, UK forces regular strength 175,000, the IDF 187,000, the USMC 200,827.

²⁷ Alon Ben-David, "IDF Unveils 5 Year Plan to Boost Capabilities," *Jane's Defence Weekly*, 12 Sep 2007. http://www4.janes.com/subscribe/jdw/doc_view.jsp?K2DocKey=/content1/janesdata/mags/jdw/history/jdw/2007/jdw34069.htm@current&Prod_Name=JDW&QueryText=%3CAND%3E%28%3COR%3E%28%28

In contrast to the USMC, the IDF/IAF presents a national level methodology which has proven capable across all levels of war to meet all of Israel's national security and airpower needs. The deep-strike raids against nuclear facilities in Iraq and Syria exemplified classic independent air operations, while fixed/rotary wing aircraft and multiple forms of ISTAR platforms provided support to land maneuvers in the Gaza Strip in 2009. Each activity demonstrated fully integrated thinking on the role of airpower. Environmental, rather than service-oriented, thinking means the IAF focusses upon best utilization and development of all airpower potential rather than on just a few elements. Air Forces across the world have tended to concentrate primarily on kinetic delivery by fast jets as the principal way of delivering airpower. This mission has also bolstered arguments for service independence. The IAF sheds that way of thinking, seeing itself as provider of capability rather than an alternative airpower user. The Israeli's integrated development of airborne ISTAR capabilities is a prime example of what can be achieved through environmental rather than service thinking. The lack of inter-service friction over ownership of assets also ensures flexibility in command and control arrangements, exemplified in the use of attack helicopters (AH). The IAF can shift this helicopter capability from devolved to centralized command, and from integrated land support to deep strike, without issue.²⁸ In contrast, the UK has neither the doctrine nor the capacity to use its AH in other than tactical roles. Finally, the IDF's military domination of the Middle East is testament to the success the IDF/IAF have had with this way of thinking. It is thus a potentially viable concept for the UK.

[%5B80%5D%28+teffen+%3CAND%3E+2012%29+%3CIN%3E+body%29%2C+%28%5B100%5D+%28%5B100%5D%28+teffen+%3CAND%3E+2012%29+%3CIN%3E+title%29+%3CAND%3E+%28%5B100%5D%28+teffen+%3CAND%3E+2012%29+%3CIN%3E+body%29%29%29%29](#) . Also Anthony H. Cordesman, Aram Nerguizian and Ionut C. Popescu. *Israel and Syria: The Military Balance and Prospects of War* (Westport, CT: Praeger, 2008), 90-91.

²⁸ Benjamin S. Lambeth, *Air Operations in Israel's War Against Hezbollah: Learning From Lebanon and Getting it Right in Gaza*, (Santa Monica, CA: RAND, 2011), 228-229.

From a UK perspective, the marked difference with its requirements and those of Israel is the absence of the latter's expeditionary role. Israel concentrates the various regional threats to the state.²⁹ It may be required to undertake action at some distance from home bases but for the most part it operates close to home.³⁰ It does not necessarily follow that the model would be unable to cope with expeditionary operations, but the capability is untested. More significantly from the UK perspective, the IAF have no history of operating with allies or coalition partners. It is unclear whether it can successfully incorporate other forces that are used to operating in a more traditional manner, nor how it would manage within a wider operation using the current paradigm.

A New Way, a New Paradigm - A New Look for UK Airpower

The USMC and the IDF have already been examined as examples of different ways to organize and employ airpower. The USMC model certainly has its merits. It fully incorporates all the military power at its disposal to achieve desired effects, shifts resources where required, and is proven to be scalable. Employment of a MAGTF operating in a low-density-of-force theater can produce operational effects. Nevertheless, the MAGTF remains in essence a tactical organization. The NSS requires the UK armed forces to operate also at the genuinely operational and strategic levels of war. Furthermore, the UK retains a desire for the flexible use of airpower in an independent role. The USMC model is of real value as a guide to maximizing capability in the tactical fight, but is

²⁹ Ben-David, "IDF Unveils 5 Year Plan to Boost Capabilities," Also Cordesman, Nerguizian and Popescu, *Israel and Syria*, 90-91.

³⁰ Perhaps the most famous long-range operation was the hostage rescue at Entebbe airfield. Eliezer Cohen, *Israel's Best Defense: The First full Story of the Israeli Air Force*. (NY: Orion Books, 1993), 404-411.

not the answer for the UK, a conclusion in accordance with the current Chiefs of Staff.³¹

The IDF/IAF model represents a better option. As a national force, it covers all levels of war, integrating the use of its airpower across the environments to achieve the desired effects. Certainly the IDF/IAF is not as integrated as the USMC in the tactical arena, but development through failure has honed a very capable entity. Furthermore, Israeli perceptions of most likely and most dangerous foes would appear to match those of the UK.³² However, the non-expeditionary nature of the IDF contrasts markedly with that of the UK armed forces, demanding a refinement of the IDF/IAF model if it were adopted.

These two models demonstrate that UK defense forces operating under a different paradigm can plausibly achieve success. Furthermore, they demonstrate that success is best achieved when adapting ideas to suit the conditions and circumstances of the force. Israel's failure in Lebanon in 2006 has been blamed on a number of causes, but it would be fairer to state that it was caused by a move away from what had been important to defeating its enemies. When the IDF had graduated to using airpower as an independent striking element, it neglecting the requirement for cooperative action with the Army.³³ The obvious lesson for the UK is to shape its forces to meet its own needs in its own way, and it is worth noting the value of maintaining some level of tradition. The individual services in return must develop environmental understanding and capability. Gen Wall perceptively raises this requirement in lamenting the degradation of single-service knowledge after the amalgamating of the separate service staff colleges into the

³¹ Author's interview with Chief of the General Staff. Also Adm Sir Mark Stanhope (First Sea Lord), interview by the author, 17 February 2012 and Air Chf Mshl Sir Stephen Dalton (Chief of the Air Staff), interview with the author 22 February 2012.

³² Ben-David, "IDF Unveils 5 Year Plan to Boost Capabilities."

³³ Cordesman, Nerguizian and Popescu, *Israel and Syria*, 90-91.

Joint Command and Staff College.³⁴ Development of joint understanding and operating is important to operational command in the future, but environmental knowledge must also be retained. This paradigm is not about experimenting with the creation of a single service, thus removing inter-service rivalry on the USMC model, but about benefiting from personnel competent in integrating their individual environmental skills to meet national objectives.

The new look for airpower in a possible new paradigm would be a combination of IDF and USMC thinking with a UK theme. The RAF would take environmental responsibility for all air matters and develop the air environment's ability to meet the UK armed forces' collective needs. As with the IAF, this would include anything that flies larger than a hand-held UAV.³⁵ It would become a genuine air-minded force with the responsibility to meet the air superiority, attack, mobility and ISTAR needs of UK armed forces.³⁶ The actual requirements would derive from the UK organizing and employing its forces as an integrated and balanced package. The force would be designed to operate independently for UK-only operations as the lead nation for a small coalition of like-minded countries. This would represent an expeditionary force with the support, but not necessarily the involvement, of the US.³⁷ Thus, the UK defense establishment would resemble an expeditionary version of the IDF. For large-scale operations, the UK would offer a coherent capability in support of US-led operations in a similar role to that of a USMC MAGTF. This capability would seek to operate in and control its own battlespace as part of the wider campaign plan. However, unlike a MAGTF, this force would also be able to operate within separate environmental areas if the situation required. This structure would be

³⁴ Author's interview with Chief of the General Staff.

³⁵ Author's interview with Chief of the Air Staff.

³⁶ FASOC defines these as the core roles of air and space power.

³⁷ Author's interview with Chief of the Air Staff.

able to fight a tactical battle, but the UK version would probably be closer to the IDF model of integrating empowered air liaison where required.

Other Considerations

Coalition Operations. Change from the current paradigm to another has implications for coalition warfare. Coalition operations are assumed for most future UK military operations.³⁸ There are three possible scenarios: a UK-led coalition; support to a non-US led operation; and support to a US-led operation. The first scenario would be the easiest to execute. A paradigm change in the way of UK operations would have most impact at the operational and strategic levels in this situation, as the new paradigm is a way of thinking rather than application of tactics. The keys to success will be the ability to include any partners with the command and control architecture, as well as the provision of capable liaison staff. A trickier prospect may be the provision of UK assets in support of a small operation led by a nation other than the US, such as France. Beyond developing coordination measures during peacetime, the best way to resolve any difficulties would be to deploy a coherent UK force while complementing the lead country's operational methods and capabilities.

US Opinion. Although the relationship with the US is always a concern in politician's minds, the new paradigm has the potential to be of real benefit to the US. First, the US focus of concern is moving away from its eastern seaboard and toward the Asia- Pacific region. Nevertheless, it remains concerned over the stability of Europe and the Middle East.³⁹ The implication is the US would like Europe to be able to take greater responsibility for resolving problems in its near-abroad,

³⁸ *The Strategic Defence and Security Review*, 12.

³⁹ *Sustaining US Global Leadership: Priorities for 21st Century Defense*, 3 January 2012, 2-3.
<http://graphics8.nytimes.com/packages/pdf/us/20120106-PENTAGON.PDF>.

allowing the US to redirect some of its resources to the Pacific. The US hand-over of lead operations in Libya to a UK and France-led NATO force could be indicative of the future.⁴⁰ A capable UK with capacity to lead others would help satisfy such US requirements. For US-led coalitions, even though the US defense structure will itself be reduced over the next decade, coalition partners are required more for their political than combat support. In those circumstances, provision of a self-contained, coherent UK force would likely be welcomed as it reduces the requirement for US help.⁴¹ The inclusion of a British Army division within the USMC's area of operations during the 2003 invasion of Iraq caused difficulties for both sides of the coalition, because of the inability of the UK contingent to support itself with airpower.⁴² The new paradigm would enhance the capability of the deployed UK force.

Making the New Paradigm Work

Education

The proposed change in paradigm requires a change in thought process. Making the new paradigm work will demand education across a number of areas. First, there will have to be a change in political thinking. The SDR was undermined because the UK committed its forces beyond its planning assumptions.⁴³ With the SDSR there are no spare forces available to commit other than within the planning assumptions. The new paradigm proposed in this thesis provides to enhance available capability, but it does not provide a means for developing additional forces. Politicians will have to fully understand that wars of choice must be chosen more carefully than previously.

⁴⁰ Author's interview with Chief of the Air Staff.

⁴¹ *The Future Character of Conflict*, 33.

⁴² *Lessons of Iraq*. House of Commons Defence Committee Third Report of Session 2003-04, Vol 1: Report, 16 March 2004, 63.

<http://www.publications.parliament.uk/pa/cm200304/cmselect/cmdfence/57/57.pdf>.

⁴³ Michael Clarke, "The Overdue Defence Review: Old Questions, New Answers," *RUSI* 153, No 6, December 2008, 6-7.

The second area of education will be among the UK armed forces. The old paradigm has led to deeply ingrained wariness of the commitment of other services to a joint way of operating, with a perpetual fear that the other services are playing a zero-sum game over resources. For many, any suggestion of bringing all airpower once again under the responsibility of the RAF may be the most difficult part of enhancing capability within the new paradigm.⁴⁴ However, with airpower being the one element that can be shifted from one environment to the other, the new construct represents the most beneficial way of using scarce airpower assets. Airpower will probably offer the single asymmetric advantage the UK will have over most of its future foes, and the country cannot afford to dilute its effects.⁴⁵ Airpower must be flexibly used to offer its best advantage. As the IAF demonstrates, provision of assets is not an issue as long as each service is working within an integrated framework. For the UK, the forces this proposed change will mostly affect have already started this journey. Battlefield helicopters of all three services are operated by a single Joint Helicopter Command within Land Command, although each service's contribution remains under Full Command of their respective service. Putting all rotary wing resources under the control of the traditionally air-minded service would make the most of shifting the entire air package to achieve desired effects. This would include those helicopters not currently within JHC, such as those on Royal Navy ships.⁴⁶ This is not to denude ships of part of their weapon system, but rather to provide a way of flexing capability where best needed as and when the joint commander needs

⁴⁴ For example, the sentiment expressed on the RN Fleet Air Arm web page, <http://www.royalnavy.mod.uk/About-the-Royal-Navy/The-Navy-and-the-Environment/In-the-Air> (accessed 5 May 12) and more vociferously in the views expressed by the Phoenix Think Tank, <http://www.phoenixthinktank.org/> (accessed 3 May 12).

⁴⁵ *Strategic Trends Document*, 71.

⁴⁶ Lynx is used in the maritime role off frigates and destroyers for anti-surface warfare (ASuW). Merlin is an ASW and ASuW platform operating from larger vessels. Sea King has a surface and air radar and used for surveillance and C2.

it.⁴⁷ The most significant effect of this decision is for the planned Royal Navy aircraft carriers. Much has been written about the need for the RN to have a significant role in the operation of fixed-wing aircraft flying from the new carriers. The First Sea Lord has been very eloquent about the value of carrier-strike in the current and future operating environment, and the RAF's Chief of the Air Staff (CAS) is supportive.⁴⁸ What is not apparent is the need for these aircraft to be controlled by RN. The UK purchase of Joint Strike Fighters (JSF), is predicated on operating any part of the whole fleet either from land or sea, dependent upon the operational requirement.⁴⁹ Furthermore, these aircraft are not being procured for "Blue Water" operations. That scenario plays no part in short or even mid-term forecasts of conflict. The aircraft will be used instead for operating over land. Therefore, the only difference is the location of the take-off and landing point. Issues remain over maintenance of deck crews and aviation roles on board ship but these can be resolved.⁵⁰ Pilots and ground crews may well be provided by the RN initially, but the new paradigm provides the benefit of keeping operational command under a single air commander. The same arrangement should follow with the Army Air Corps (AAC) assets, particularly AH. Implementing the new paradigm would place assets in the position where all capabilities can be best used and considered.

The new paradigm requires trust that the effects required from the other environments will be available when and where required. This will be critical for the RAF if it is to become responsible for the provision and coordination of airpower for the UK. The failure to support the maritime and land environments resulted in the re-formation of the Royal Navy Air Service (RNAS) in 1937 and effectively the Royal Flying Corps (RFC) in

⁴⁷ Author's interview with Chief of the Air Staff.

⁴⁸ Author's interviews with Chief of the Air Staff and First Sea Lord.

⁴⁹ The Strategic Defence and Security Review, 23, 26. Also author's interview with Chief of the Air Staff.

⁵⁰ Authors interview with Chief of the Air Staff and First Sea Lord.

the guise of the AAC.⁵¹ The same was true over the intense ill feeling caused between the US Army and the USAF over the provision of close air support and small air transport aircraft in the 1960s.⁵² The new paradigm could help the development of closer Joint working as each service takes on the mantle of environmental primacy, demanding that all three become involved in mission accomplishment. This leads to the third area of education, among the service chiefs. To make the most of the paradigm, they need to agree, and most importantly be seen and heard to agree, on fully implementing it. There can be no secret agendas if the scheme is to work.

The final area of education will be explaining the new paradigm to the nation. Defense may not be a vote winner in any modern British General Election, but it has the potential to be a vote loser. The British public remains very interested in “Our Boys,” with *The Sun* newspaper, an influential publication in UK politics, having its own forces section.⁵³ For the paradigm to be accepted, the nation will have to be persuaded that the legacy of the 20th century is of little relevance to the national security issues of today and tomorrow. It will be difficult for many to accept that the UK can no longer operate as the US does. The US way of war simply demands resources and technology the UK can no longer emulate. The new paradigm will, however, allow international prestige to be maintained and perhaps even enhanced as the UK perfects its new way of operating and employing military force.

⁵¹ Air Publication (AP) 3003. *A Brief History of the Royal Air Force*. 2004, 58-59. The Army Air Corps was formed in 1942 to administer the new airborne division which combined parachute and glider insertion. <http://www.army.mod.uk/aviation/320.aspx>.

⁵² Ian Horwood, *Interservice Rivalry and Airpower in the Vietnam War*, (Fort Leavenworth, KA: Combat Studies Institute Press, 2009), 103-137.

⁵³ For example, http://www.thesun.co.uk/sol/homepage/news/campaigns/our_boys/. Other newspapers have similar sites including <http://www.telegraph.co.uk/news/uknews/defence/> and <http://www.thetimes.co.uk/tto/news/uk/defence/>.

Understanding and Applying Airpower

The proposed new paradigm emphasizes a new mentality. Making this new paradigm work requires airmen at all levels to apply fully all aspects of airpower. For senior leaders this demands an ability to develop air strategy. Colin S. Gray calls for the US to understand the need for, and implementation of, strategy if it is to take full advantage of airpower.⁵⁴ For UK airmen, whose resources are heavily restricted in comparison to the US, the need for strategy is even more important. Such a grasp involves being part of the planning and execution process. This demands not only educating airmen in the wider aspects of developing and applying strategy, but also involving them in cross-environment training exercises. The new paradigm changes service expectations from operating separately to operating together. With the means fixed, the services must work collectively to use the available assets to meet desired ends. Maximum benefit is achieved from intimate understanding of each other's needs. As the Israelis have demonstrated, this can only come through regular exercises.⁵⁵ Existing training schedules for the different services have not been developed for the benefit of the coherent force. The new Joint Forces Commander requires full support from the individual services in following his joint training programs.⁵⁶

Training should also serve to develop the C2 relationships to make integration of effects actually work. Furthermore, joint training will develop the possibilities of scalability within the new paradigm. For the air environment this should help develop the UK's deployable Joint Force Air Component HQ (JFACHQ), the permanent Air Support Operations

⁵⁴ Colin S. Gray, "The Airpower Advantage in Future Warfare: The Need for Strategy," Research Paper 2007-2, (Airpower Research Institute, December 2007) 1-3.

⁵⁵ Lambeth, *Air Operations in Israel's War Against Hezbollah*, 263-268.

⁵⁶ *Defence Reform: An independent report into the structure and management of the Ministry of Defence*. The Levene Report, MoD, June 2011, 44-47. http://www.mod.uk/NR/rdonlyres/B4BA14C0-0F2E-4B92-BCC7-8ABFCFE7E000/0/defence_reform_report_struct_mgt_mod_27june2011.pdf.

Centre (ASOC), and the Air Liaison system.⁵⁷ This organization will be required to ensure UK airpower provides capabilities when and where needed. The Israeli airpower C2 architecture developed prior to their recent Gaza Strip intervention could provide a useful model for the UK.⁵⁸ Doctrine must also adapt to the new paradigm.

This new paradigm also alters the way the services relate to the idea of componency.⁵⁹ The CGS referred to the difficulty of applying doctrine to scalable headquarters. He discussed the work undertaken in bringing environmental expertise into the UK's Joint Task Force HQ (JTFHQ) when independent components were not required.⁶⁰ His own experience suggested that ensuring the correct expertise must be applied at the right time and place. The new paradigm also demands bringing environmental expertise to bear. Although beyond the scope of this paper, the change in paradigm suggests a wider move to environmental vice service components. Such a development would enable integration and genuinely joint operations.

Procurement

The new paradigm is based on the assumption that no new money will be available. However, new systems will be procured at some point in the future; and the paradigm will change the requirements. With

⁵⁷ An ASOC deploys as a forward air C2 element able to dynamically control air assets. At present it has only a limited planning function.

⁵⁸ Lambeth, *Air Operations in Israel's War Against Hezbollah*, 228-229.

⁵⁹ "Components are collections of forces drawn from one or more Services and grouped into *functional* elements (Maritime, Land, Air, Logistics, Special Forces (SF) and, if the situation dictates, Amphibious). They are often organized under Component Commanders subordinate to a Joint Force Commander (JFC). Componency reduces a JFC's span of command, improves internal cooperation (including functional input into campaign planning), and provides organizational agility. While it has particular utility on major combat operations, componency may be less useful in other situations where, by dint of scale, tempo or complexity, forces may be orchestrated more effectively in other ways (using extant single-Service Command and Control (C2) arrangements, by fielding integrated national headquarters, or by providing UK national contingents to a multinational force). The practical application of componency, in its various forms on national and coalition operations, remains the subject of debate." Joint Doctrine Publication (JDP) 1-0 *Campaigning*. 2nd Ed. Dec 2008, 3-1.

⁶⁰ The UK JTFHQ is a high readiness C2 unit designed, trained and equipped to deploy as a coherent unit for command and control of expeditionary situations.

inter-service competition for resources replaced by collective agreement upon coherent capability, the emphasis in procurement changes from platforms to the glue that binds them together. As demonstrated by the USMC, there is significant benefit from ensuring all systems become part of an integrated package. Ownership also starts to become less of an issue when the focus is on collective success. For example, the Israelis are at the forefront in the development and utilization in the use of unmanned air systems to meet IDF needs in the land, maritime, and air environments. This need is understood to be for the benefit of mutual victory; the IAF operates it on everyone's behalf. In a similar manner, the Teffen 2012 plan accepts that land elements require the most resource to meet the current way the IDF operates; IAF and Israeli Navy resources have been reduced accordingly. The Israeli national need requires this reallocation of resources to meet the collective requirement.⁶¹

Difficulty of Implementation

The Chiefs of Staff appear to have become convinced that major changes are now required.⁶² The real danger to success will be in the Chiefs of Staff only half-way implement the paradigm shift, thus creating an organization unable to do anything well. The best outcome in this case would be embarrassment in the eyes of allies; the worst would be defeat and a retreat from influence. As with Kuhn's description of the scientists who refuse to accept the new paradigm, the UK could be in danger of being left behind only to become irrelevant.⁶³ Additionally, a significant element of the armed forces failing to accept the new paradigm could degrade successful transition. The difficulty here will be in the perception of winners and losers, most likely made worse by

⁶¹ Ben-David, "IDF Unveils 5 Year Plan to Boost Capabilities." Also Cordesman, Nerguizian and Popescu, *Israel and Syria*, 90-91.

⁶² Open letter to *The Times* by the Chiefs of Staff, 12 November 2010.
<http://www.mod.uk/DefenceInternet/DefenceNews/DefencePolicyAndBusiness/ChiefsOfStaffStandBySdsr.htm>.

⁶³ Kuhn, *The Structure of Scientific Revolutions*, 18-19.

partisan media coverage. The most obvious area of contention will be in the perception that the RAF is stealing the RNAS for a second time, just at the point of a return of a genuine aircraft carrier capability. The Army may have similar difficulties with the change in direct command of helicopters, and even more so its unmanned air systems. Yet the movement of capabilities need not always be towards the RAF. It would seem equally reasonable for the capability to defend air assets on the ground, the current role of the RAF Regiment, to transfer to Army responsibility. The answer goes back to education. Defense leaders must emphasize the new paradigm helps to ensure the provision of effect as and where the joint force requires it. This will not be an easy transition but the option to do nothing may be worse. The possibility of the UK becoming “Belgium with nukes” has not gone away.⁶⁴



⁶⁴ Douglas Carswell, Conservative Member of Parliament, comments reported in a number of UK newspapers including *The Independent*, 20 October 2010. <http://www.independent.co.uk/news/uk/politics/forces-left-unable-to-launch-its-major-missions-overseas-2111341.html>.

Conclusions

The only thing harder than getting a new idea into the military mind is to get an old one out.

- B.H. Liddell Hart

The Strategic Defence and Security Review (SDSR) brought a not unfamiliar challenge to the UK armed forces - a shortage of financial resources to meet the required tasks. This situation occurred at the end of World War One, World War II and during most of the subsequent defense reviews. The difference in 2010 was a recent history of defense cuts made in the years leading up to, and during, the armed forces involvement in two wars of choice that were over-and-above policy assumptions. The result has been that the UK armed forces can seemingly no longer balance ends, ways, and means.¹ In a dire financial climate something must change.² British Defence Doctrine published after the SDSR states:

States with armed forces that lack the means of effectively projecting their power on a global scale can exert only limited regional influence...This ability is a crucial element of the UK's power in international relations.³

The UK could withdraw to its basic defense needs; it could become a smaller player on the world stage in order to live within its finances. The withdrawal from "East of Suez" of UK military presence during the late 1960s heralded a retrenchment that historians identify as the point

¹David Brown, "Striking a Balance? Labour's Legacy and the Next Chapter of British Defence Policy," in *The Development of British Defence Policy: Blair Brown and Beyond*, (Farnham, UK: Ashgate Publishing Ltd, 2010), 230.

² Brown, "Striking a Balance?" 219.

³ Joint Doctrine Publication (JDP) 1-0 *Campaigning*. 2nd Ed. December 2008, 1-8.
http://www.mod.uk/NR/rdonlyres/B875F5EC-B17F-4CA3-BB2D-B418B7B284C0/0/20090219JDP_01_2EdUDCDCIMAPPS.pdf

at which the UK left the top tier of world influence.⁴ Continued military interventions after that time, particularly after the end of the Cold War, indicate that reports of the death of British influence have been greatly exaggerated; no one at least seems to have told the British population or its government of this.⁵ The difficulty then remains, how to meet large expectations with few resources?

Economics has been at the heart of every review discussed. As Paul Cornish and Andrew Dorman observe, “services hate reviews as they mean cut backs.”⁶ The problem with reductions is they have generally been made on an individual service basis resulting in each service defending its own perspective and justifying why its platforms should be saved and why another services platforms should be cut first. The coherence of the forces have become lost, and bitter divisions ensued.⁷ During the Cold War, the absence of a coherent UK force was accepted as the risk to be taken in order to ensure prioritization against the most dangerous threat – invasion of Europe by Warsaw Pact forces.⁸ The Falkland’s Conflict in 1982 was an aberration of this policy and one from which the UK was fortunate to emerge victorious.⁹ The end of the Cold War removed the most dangerous conventional threat to the UK, yet the institutional consideration of peer competition remained as the measure for the UK’s force establishment and structure. This scenario continues to be raised whenever forward-looking plans are raised. With economic pressure once again reducing the funds available for the armed

⁴ Pham, P.L. “Ending ‘East of Suez’: The British Decision to Withdraw from Malaysia and Singapore, 1964-1968,” *Twentieth Century British History* 21 Issue 2, (2010), 249-251.

⁵ Michael Codner, “A Force for Honour? UK Military Strategic Options,” in *A Question of Security: The British Defence Review in an Age of Austerity* (London, UK: I.B.Tauris, 2011), 153-162.

⁶ Paul Cornish and Andrew M. Dorman. “Dr Fox and the Philosopher’s Stone: the alchemy of national defence in the age of austerity,” *International Affairs* 87, Issue 2 (March 2011), 345.

⁷ Trevor Taylor, “Jointery and the Defence Review,” in *A Question of Security: The British Defence Review in an Age of Austerity* (London, UK: I.B.Tauris, 2011), 181-184.

⁸ *The Falklands Campaign: The Lessons*, (London, UK: HMSO 1983), 35.

⁹ Lawrence Freedman, “Air Power and the Falklands, 1982,” in *A History of Air Warfare*, (Dulles, VA: Potomac Books, 2010), 172-174.

forces, it is now necessary to look forward to the future operating environment.¹⁰

Changing the emphasis from the most dangerous to the most likely threat to UK interests fundamentally alters the expected requirement for the armed forces. Philip Sabin adapted a Yogi Berra saying by stating “predictions are very difficult, especially about the future”, but there seems to be a consistency in expectation that state-on-state hostilities requiring major combat operations are unlikely to be undertaken in the near future.¹¹ Instead, the use of force will most likely be in more limited circumstances. Once again, for the UK these operations will be part of a coalition that may or may not have a US lead. In this environment, forces must act coherently.¹² This is where the change of mentality is required.

In the UK, airpower is applied by all three services. The Army and Royal Navy (RN) have utilized it for tactical tasks within their own environments while the Royal Air Force (RAF) has sought to apply independent airpower as a tactical and operational level force, thus it supports the other services as required. This is in keeping with the old paradigm. However, in a resource-constrained environment, the UK cannot afford the luxury of duplicating effort and resources; it must concentrate effort when and where required. Airpower can be the main instrument of change because it will always play a part in almost any future operation.¹³ Airpower leads the way in cross-domain thinking because it operates in the other domains in a way maritime and land

¹⁰ “Cuts go on as Britain slips into double-dip recession”, *The Times*, 26 April 2012, <http://www.thetimes.co.uk/tto/business/economics/article3394788.ece>.

¹¹ Philip Sabin, “The Current and Future Utility of Air & Space Power,” *RAFCAPS Discussion Paper* No 1, 3. <http://www.airpowerstudies.com/discussionpapers.htm>

¹² “Adaptability and Partnership: Issues for a Strategic Defence Review,” *The Defence Green Paper*, 3 February 2010. 14-15. <http://www.mod.uk/DefenceInternet/AboutDefence/CorporatePublications/ConsultationsandCommunications/PublicConsultations/TheDefenceGreenPaper2010Discussion.htm>

¹³ Sabin, “The Current and Future Utility of Air & Space Power,” 8.

power cannot. Counter-insurgency operations have often been described as a type of land war. But Western forces could not operate in the way they do, and with the low force ratios they employ, without the involvement of airpower. In Afghanistan and Iraq, this meant the guarantee of air superiority and the application of mobility, intelligence and situational awareness, as well as attack.¹⁴ Airpower from a ship or an airbase, operated by any of the services, is still airpower. If airpower is to be used to its maximum benefit, it should be used by air-minded people who can shift and direct the capability to where it is required most, both in peacetime during conceptualization of how airpower can best be employed, and during conflict. Within the UK armed forces in a time of reduced size, the future of airpower would best be kept in the hands of a single organization to ensure it was used in the best possible manner in all environments. That organization would naturally be the RAF.¹⁵

This a measure goes far beyond anything envisaged in the SDSR, which attempts to utilize the concept of Jointery to achieve similar benefits without significant institutional change. For the UK, Jointery should mean far more than three services working together to gain benefit at the tactical level, but rather an institutionalized joining of services within a particular capability. Jointery has always been seen as an economic measure, and potentially a way of the individual services continuing to do what they have always done while appearing to work together. The creation of a four-star Joint Forces Command in the SDSR was championed in the Levene Study Report on Defence Reform because

¹⁴ *Future Air and Space Operational Concept* (FASOC) 2009. Development, Concepts, and Doctrine Centre, 2-2 – 2-5. <http://www.mod.uk/DefenceInternet/MicroSite/DCDC/OurPublications/Concepts/> The UK describes four fundamental roles of air power: control of the air; mobility and lift; intelligence and situational awareness; and attack.

¹⁵ Sabin, “The Current and Future Utility of Air & Space Power,” 11-12. Also Air Chf Mshl Sir Stephen Dalton (Chief of the Air Staff), interview with the author 22 February 2012.

it would address some of these issues.¹⁶ However, based upon historical precedence, Jointery has tended to ingrain service separation, to the neglect of the capabilities lying along environmental seams. These are exactly the areas that require developing in the unfolding strategic environment. In particular, helicopters and ISTAR platforms, along with inter-domain cooperation and liaison, have all fallen victim to service protectionism.¹⁷ Jointery as currently interpreted will probably not meet the desired outcome.

The CDS has frequently emphasized the need for change.¹⁸ All three service Chiefs have in one form or another said that there may be a better way of using assets. Understandably, however, the First Sea Lord and the Chief of the General Staff (CGS) were less enthusiastic about the RAF undertaking the lead in all air matters than was the Chief of the Air Staff (CAS).¹⁹ Nevertheless, this fundamental change in thinking represents the best chance to maximize capability in the manner demanded by the current situation. This thesis has examined two potential models, the US Marine Corps (USMC) and the Israeli Defense Force/Israeli Air Force (IDF/IAF). The former is an exceptional model for integrating land, air, and maritime power into a single coherent unit, but

¹⁶ *Defence Reform: An independent report into the structure and management of the Ministry of Defence*. The Levene Report, MoD, June 2011, 44. http://www.mod.uk/NR/rdonlyres/B4BA14C0-0F2E-4B92-BCC7-8ABFCFE7E000/0/defence_reform_report_struct_mgt_mod_27june2011.pdf

¹⁷ Cavanagh, Matt. "Missed Opportunity: How Failures of Leadership Derailed the SDSR," *The RUSI Journal* 156, No 5 (October/November 2011), 10. Also Paul Cornish and Andrew M. Dorman, "Blair's wars and Brown's budgets: from Strategic Defence Review to strategic decay in less than a decade," *International Affairs* 85, Issue 2 (March 2009), 260. http://www.chathamhouse.org/sites/default/files/public/International%20Affairs/2009/85_2cornish_dorman.pdf

¹⁸ Gen David Richards. "Securing Britain in an Age of Uncertainty," Speech delivered at the Policy Exchange, London, 22 November 2010. <http://www.mod.uk/DefenceInternet/AboutDefence/People/Speeches/ChiefStaff/20101122SecuringBritainInAnAgeOfUncertainty.htm>. Also Gen David Richards. 11th Annual Chief of Defence Staff Lecture, Royal United Services Institute, London, 14 December 2010. <http://www.mod.uk/DefenceInternet/AboutDefence/People/Speeches/ChiefStaff/2010121411thAnnualChiefOfDefenceStaffLecture.htm>.

¹⁹ Adm Sir Mark Stanhope (First Sea Lord), interview by the author, 17 February 2012. Also Gen Sir Peter Wall (Chief of the General Staff), interview by the author, 20 February 2012; and author's interview with CAS.

it is not a viable model for the UK. A UK version of the IAF is more appropriate and potentially productive.

The IAF delivers air effects wherever they are required, and in whichever domain, to meet the national goals. This can be either in support of the other two domains or in independent actions. This is the model envisaged by Jan Smuts in 1917 but not adopted.²⁰ The new paradigm proposed in this thesis advocates a coherent model bringing the services together. All elements must change their mindsets as called for by the CDS.²¹ The paradigm shift requires the UK to fight its wars based on the acceptance of how the different environments best fit together to meet national goals. The roll of the services is to help meet these goals, not to achieve their own betterment.²² Jointery has previously pointed the way to what may be possible. Helicopter operations by all three services within the JHC construct have demonstrated that the service operating the aircraft is irrelevant. RAF Chinooks operated initially off ships providing amphibious maneuver during the seizing of the Al Faw Peninsula at the start of the Second Gulf War in 2003.²³ RN Sea King Airborne Surveillance and Control (ASaC) helicopters have been operating in Helmand Province using their radar for ground-tracking.²⁴ More recently, Army Air Corps (AAC) attack helicopters have operated from a carrier in support of the operations in Libya.²⁵ All this is airpower, but the failure of the overarching Future

²⁰ *Second Report of the Committee on Air Organisation and Home Defence Against Air Raids*. 17 Aug 1917. The UK National Archives CAB/24/22.

²¹ Gen David Richards, "Future Conflict and its Prevention: People and the Information Age," Speech delivered at International Institute for Strategic Studies, London, 18 Jan 2010. <http://www.iiss.org/recent-key-addresses/general-sir-david-richards-address/>

²² Paul Cornish and Andrew M. Dorman, "National Defence in the age of austerity," *International Affairs* 85, Issue 4 (July 2009), 752.

²³ "Royal Air Force CH47 'Bravo November'," <http://www.raf.mod.uk/news/royalairforcech47chinookbravonovember.cfm>

²⁴ "ASaC Sea Kings to provide election overwatch" <http://www.shephardmedia.com/news/rotorhub/asac-sea-kings-to-provide-election-overw/>

²⁵ "British Apache Helicopters strike Gaddafi's forces for the first time", *The Guardian*, 4 June 11. <http://www.guardian.co.uk/world/2011/jun/04/apache-helicopters-strike-libya-targets>

Rotary Wing Strategy demonstrates that further development of this airpower requires leadership from an Airman rather than those who merely use air tactically.²⁶

A change of mentality is not about platforms but about how airpower is used. The IAF experience shows this cannot be done in isolation, but must be accomplished with the other services. It requires change in doctrine to suit the circumstances. The Israeli experience in the alternate paradigm structure is to adjust control authority according to the need; this helps accomplish the goal, while maintaining the flexibility of airpower. However, this also demands senior airmen being able to devolve authority to where it can have greatest effect, as well as education for those at different levels of command. It also requires training in a multi-service environment.²⁷ The CGS particularly recognizes the need to train as a coherent organization.²⁸

A UK change in paradigm has the potential to cause wider problems if it cannot be made compatible with the ways of coalition partners and allies. The chances of the UK fighting alone are slim, despite the noises being made by Argentina over the Falkland Islands.²⁹ However, it would seem highly likely that the UK's partner of choice, the US, would accept a UK contribution in whatever form it appeared. UK support to US operations is more politically, rather than militarily, essential and any change from the paradigm shift would not remove any of the niche capabilities of the UK that the US has used in recent years, for example probe and drogue air-to-air refueling for US Navy aircraft

²⁶ Author's interview with Chief of the Air Staff.

²⁷ Benjamin S Lambeth, *Air Operations in Israel's War Against Hezbollah: Learning From Lebanon and Getting it Right in Gaza*, (Santa Monica, CA: RAND, 2011), 228-229, 263-268.

²⁸ Author's interview with Chief of the General Staff

²⁹ "Argentina gives Falklands oil explorers 2 May ultimatum," *The Telegraph*, 26 April 2012.
<http://www.telegraph.co.uk/finance/newsbysector/energy/oilandgas/9229992/Argentina-gives-Falklands-oil-explorers-May-2-ultimatum.html>

and fast jet tactical reconnaissance.³⁰ Furthermore, the development of a truly cohesive capability able to deliver effect rapidly would readily be accommodated, as the US already does so with its own USMC. The bigger difficulty may possibly arise when integrating with non-US partners, which may occur more frequently with the change in US strategic perspective towards Asia.³¹ This may be more a theoretical than an actual problem, as experience suggests there are only a few countries actually willing and able to take the lead for such a coalition, with the UK being one of them. Incorporating other nations within the new paradigm should not prove overly difficult, whereas adapting to support another country's lead, France for example, would be unlikely to prove too problematic given the scale of any such operation.³² This latter point is the key. There is no expectation of fighting large-scale operations as in the past; the new paradigm meets the criteria for the new world not the old.

Fiscal pressure poses the question: how should one make the most out of airpower? The question is being asked because the old way of doing things can no longer meet the requirement. The proposal is to inverse the way the UK looks at its measure of requirement for its armed forces, for them to organize, train and equip as a coherent unit rather than as separate entities. After this leap is taken, the second step is to organize all airpower within a single service, charged with meeting all the airpower needs of the force. The IDF already use this model, and have a

³⁰ Anthony H. Cordesman, "The Growing British Role in the War Against the Taliban and Al Qaeda: Force Contributions and Chronology," Center for Strategic and International Studies, 30 October 2001, 1. [http://csis.org/files/media/csis/pubs/011030_cord\[1\].pdf](http://csis.org/files/media/csis/pubs/011030_cord[1].pdf). Also, "RAF Imagery Wing helps identify Gaddafi targets." <http://www.raf.mod.uk/newsweather/index.cfm?storyid=A2FF275A-5056-A318-A882E9E270DD5AC7>

³¹ *Sustaining US Global Leadership: Priorities for 21st Century Defense*, 3 January 2012, 2. <http://graphics8.nytimes.com/packages/pdf/us/20120106-PENTAGON.PDF>

³² *Securing Britain in an Age of Uncertainty: The Strategic Defence and Security Review*, October 2010, 60-61. http://www.direct.gov.uk/prod_consum_dg/groups/dg_digitalassets/@dg/@en/documents/digitalasset/dg_191634.pdf?CID=PDF&PLA=furl&CRE=sdsr

fearsome reputation. Adopting the IDF as a model requires modification to meet the expeditionary requirement of UK operations, but such adjustment is not insurmountable. This shift in paradigm seeks to rectify the strains evident in the old paradigm's way of balancing means and ways to achieve the ends. The shift has occurred because the world has changed; the difficulty for many will be in accepting the new paradigm because they would prefer to cling to the old ways.³³ It could be that Jan Smuts was far more prescient 96 years ago than even the RAF give him credit for bring.



³³ Thomas S. Kuhn, *The Structure of Scientific Revolutions*. 3rd Ed. (1962; repr., Chicago: Chicago University Press, 1996), 18-19.

Bibliography

Academic Papers

- Cordesman, Anthony H. "Preliminary 'Lessons' of the Israeli-Hezbollah War." Working draft for outside comment, Center for Strategic and International Studies, 17 Aug 2006.
http://csis.org/files/media/csis/pubs/060817_isr_hez_lessons.pdf (accessed 2 Apr 2012).
- Cornish, Paul. "Strategy in Austerity: The Security and Defence of the United Kingdom," A Chatham House Report, Oct 2010.
http://www.chathamhouse.org/sites/default/files/r1010_cornish.pdf (accessed 24 Jan 2012).
- Gray, Colin S. "The Airpower Advantage in Future Warfare: The Need for Strategy," Research Paper 2007-2, Airpower Research Institute, December 2007.
- Redford, Duncan. "Written evidence to The Strategic Defence and Security Review and the National Security Strategy – Defence Committee," 3 Aug 2011.
<http://www.publications.parliament.uk/pa/cm201012/cmselect/cmdfence/761/761vw22.htm> (accessed 3 May 2012).
- Sabin, Philip. "The Current and Future Utility of Air & Space Power," RAFCAPS Discussion Paper No 1.
<http://www.airpowerstudies.com/discussionpapers.htm> (accessed 15 Feb 2012).
- Seigal, Adam B. "Who Will Do What With What?" Alexandria, VA: Center for Naval Analyses, 1993.
<http://www.cna.org/sites/default/files/research/9601160010.pdf> (accessed 22 Mar 2012).
- Speller, Ian. "Delayed Reaction: UK Maritime Expeditionary Capabilities and the Lessons of the Falklands Conflict."
<http://eprints.nuim.ie/844/1/Speller.pdf> (accessed 3 May 2012)

Articles

- Ben-David, Alon. "IDF Unveils 5 Year Plan to Boost Capabilities," *Jane's Defence Weekly*, 12 Sep 2007.
http://www4.janes.com/subscribe/jdw/doc_view.jsp?K2DocKey=/content1/janesdata/mags/jdw/history/jdw2007/jdw34069.htm@current&Prod_Name=JDW&QueryText=%3CAND%3E%28%3COR%3E%28%28%5B80%5D%28+teffen+%3CAND%3E+2012%29+%3CIN%3E+body%29%2C+%28%5B100%5D+%28%5B100%5D%28+teffen+%3CAND%3E+2012%29+%3CIN%3E+title%29+%3CAND%3E

- [%28%5B100%5D%28+teffen+%3CAND%3E+2012%29+%3CIN%3E+body%29%29%29%29](#) (accessed 3 May 2012).
- Blagden, David. "Strategic Thinking for the Age of Austerity," *RUSI Journal*, Vol 154, No 6 (December 2009): 60-66.
- Bryant, Simon. "Air, Space and Cyber Power," *RUSI Journal*, Vol 155, No 5 (October/November 2010): 44-49.
- Campbell, Menzies and Ben Jones. "No Choice but Change for Britain's Armed Forces," *RUSI Journal*, Vol 154, No 2 (April 2009): 42-48.
- Cavanagh, Matt. "Missed Opportunity: How Failures of Leadership Derailed the SDSR," *RUSI Journal*, Vol 156, No 5 (October/November 2011): 6-13.
- Clarke, Michael. "The Overdue Defence Review: Old Questions, New Answers," *RUSI*, Vol 153, No 6 (Dec 2008): 4-10.
- Codner, Michael. "The Strategic Defence Review: How Much? How far? How Joint is Enough?" *RUSI Journal*, Vol 143, No 4, (Aug 1998): 5-10.
- Cohen, Stuart A. "An Exchange on Israel's Security Doctrine," *Middle East Review of International affairs*, Vol 5, No 4 (December 2001): 127-134. <http://meria.idc.ac.il/journal/2001/issue4/cohen-rodman.pdf> (accessed 15 Feb 2012).
- Cornish, Paul. "UK Defence: A Test Case," *The World Today*, Vol 67, No 5, (May 2011): 4-6.
- Cornish, Paul and Andrew M. Dorman. "Blair's wars and Brown's budgets: from Strategic Defence Review to strategic decay in less than a decade," *International Affairs*, Vol 85, Issue 2 (March 2009): 247-261. http://www.chathamhouse.org/sites/default/files/public/International%20Affairs/2009/85_2cornish_dorman.pdf (accessed 24 Jan 2012).
- Cornish, Paul and Andrew M. Dorman. "National Defence in the age of austerity," *International Affairs*, Vol 85, Issue 4 (July 2009): 733-753.
- Cornish, Paul and Andrew M. Dorman. "Breaking the mould: the United Kingdom Strategic Defence Review 2010," *International Affairs*, Vol 86, Issue 2 (March 2010): 395-410.
- Cornish, Paul and Andrew M. Dorman. "Dr Fox and the Philosopher's Stone: the alchemy of national defence in the age of austerity," *International Affairs*, Vol 87, Issue 2 (March 2011): 335-353. http://www.chathamhouse.org/sites/default/files/public/International%20Affairs/2011/87_2cornish_dorman.pdf (accessed 24 Jan 2012).
- Creveld, Martin. "The Rise and Fall of Air Power," *The RUSI Journal*, Vol 156, No 3 (June/July 2011): 48-54.

- Dorman, Andrew. "Reconciling Britain to Europe in the Next Millenium: The Evolution of British Defense Policy in the Post-Cold War Era," *Defense Analysis*, Vol 17, No 2 (2001): 187-202.
- Dunn, Mike, Bill Eggington, Nigel Pye, Trevor Taylor, and Brian Watters. "The Defence Reform Agenda," *RUSI Briefing Paper*, June 2011.
- Edmunds, Timothy. "The Defence Dilemma in Britain," *International Affairs*, Vol 86, Issue 2 (March 2010): 377-394.
- Evans, Michael. "The Twenty-First Century Security Environment: Challenges for Joint Forces," *RUSI Journal*, Vol 154, No 2 (April 2009): 64-72.
- Gordon, Shmuel L. "The Vulture and The Snake Counter-Guerilla air warfare: The War in Southern Lebanon," *Mideast Security and Policy Studies*, No 39, (July 1998).
<http://www.biu.ac.il/SOC/besa/books/39pub.html> (accessed 3 May 2012).
- Hartley, Keith. "The Economics of the Defence Review," *RUSI Journal*, Vol 155, No 6 (December 2010): 4-8.
- Kober, Avi. "What Happened to Israeli Military Thought?" *Journal of Strategic Studies*, Vol 34, No 5 (October 2011): 707-732.
- Loader, Clive. "Is True Air/land Integration Achievable?" *RUSI Defence Systems*, Feb 2009: 50-52.
- Mills, Greg. "Between Trident and Tristars?" *RUSI Journal*, Vol 155, No 3 (Jun/Jul 2010): 28-32.
- Moore, R. Scott. "Rethinking the MAGTF," *Marine Corps Gazette*, Jun 1992: 20-27.
- Parton, Neville. "Israel's 2006 Campaign in the Lebanon," *Air Power Review*, Vol 10, No 2 (Summer 2007): 80-91.
http://www.raf.mod.uk/rafcms/mediafiles/B0737F9D_1143_EC82_2ED9403BBACBE126.pdf (accessed 24 Mar 2012).
- Pham, P.L. "Ending 'East of Suez': The British Decision to Withdraw from Malaysia and Singapore, 1964-1968," *Twentieth Century British History*, Vol 21 Issue 2, 2010: 249-251.
- Rifkind, Malcom, Menzies Campbell and Bob Ainsworth. "Defence Perspectives," *RUSI Journal*, Vol 156, No 1 (February/March 2011): 6-11.
- Ripley, Tim. "SDSR: Air power hit hard in UK defence review," *Jane's Defence Weekly*, (22 Oct 10).
http://www4.janes.com/subscribe/jdw/doc_view.jsp?K2DocKey=/content1/janesdata/mags/jdw/history/jdw2010/jdw44624.htm@current&Prod_Name=JDW&QueryText=%3CAND%3E%28%3COR%3E%28%28%5B80%5Dsdsr+%3CIN%3E+body%29%2C+%28%5B100%5D+%28%5B100%5Dsdsr+%3CIN%3E+title%29+%3CAND%3E+%28%5B100%5Dsdsr+%3CIN%3E+body%29%29%29
 (accessed 17 Mar 12).

- Ripley, Tim. "Confusion remains in aftermath of SDSR," *Jane's Defence Weekly*, (9 Nov 2010).
http://www4.janes.com/subscribe/jdw/doc_view.jsp?K2DocKey=/content1/janesdata/mags/jdw/history/jdw2010/jdw44596.htm@current&Prod_Name=JDW&QueryText=%3CAND%3E%28%3COR%3E%28%28%5B80%5Dsdsr+%3CIN%3E+body%29%2C+%28%5B100%5D+%28%5B100%5Dsdsr+%3CIN%3E+title%29+%3CAND%3E+%28%5B100%5Dsdsr+%3CIN%3E+body%29%29%29%29
 (accessed 17 Mar 12).
- Rodman, David. "The Role of the Israel Air Force in the Operational Doctrine of the Israel Defense Forces: Continuity and Change," *Air & Space Power Journal*, (29 Jun 2000).
<http://www.airpower.au.af.mil/airchronicles/cc/rodman.html>
 (accessed 3 May 2012).
- Rodman, David. "Israel's National Security Doctrine: An Introductory Overview," *Middle East Review of International Affairs*, Vol 5, No 3 (September 2001).
<http://meria.idc.ac.il/journal/2001/issue3/jv5n3a6.html>
 (accessed 15 Feb 2012).
- Rodman, David. "Combined Arms Warfare in the Israel Defense Forces: An Historical Overview," *Defence Studies*, Vol 2, No 1 (Spring 2002): 109-126.
- Rodman, David. "Israel's National Security Doctrine: An Appraisal of the Past and a Vision of the Future," *Israel Affairs*, Vol 9, Issue 4 (2003): 115-140.
- Sabin, Paul. "The Future of UK Air Power," *RUSI Journal*, Vol 154, No 5 (October 2009): 6-12.
- Spielgeleire, Stephan. "Ten Trends in Capability Planning for Defence and Security," *RUSI Journal*, Vol 156, No 5 (October/November 2011): 20-28.
- Strachan, Hew. "Strategy as a Balancing Act: The UK's Dilemma," *RUSI*, Vol 153, No 3 (June 2008): 6-10.
- Strachan, Hew. "One War, Joint Warfare," *RUSI Journal*, Vol 154, No 4 (August 2009): 20-24.
- Stocker, Jeremy R. "Canadian 'Jointery'," *Joint Forces Quarterly*, Winter 1995-96: 116-118.
http://www.dtic.mil/doctrine/jel/jfq_pubs/2410.pdf (accessed 28 Apr 2012).
- Sweetman, John. "The Smuts Report of 1917: Merely Political Window-Dressing?" *The Journal of Strategic Studies*, Vol 4, Issue 2 (Jan 2008): 152-174.
- Taylor, Trevor. "Jointery and the Emerging Defence Review," *RUSI Future Defence Review*, Working Paper No 4, (November 2009): 1-10.
http://www.rusi.org/downloads/assets/FDR_4.pdf (accessed 23 Apr 2012).

- Taylor, Trevor. "What's New? UK Defence Policy Before and After the SDSR," *RUSI Journal*, Vol 155, No 6 (December 2010): 10-14.
- "UK air force may have its wings clipped," *The International Institute for Strategic Studies*, Vol 16, Comment 26, Sep 2010.
- Weighill, Rob. "Air/Land Integration – The View from Mars" *RUSI Defence Systems*, Feb 2009: 53-56.
- Quintana, Elizabeth. "Austere Air Power? British Air and Space Power in the Post-SDSR Environment," *RUSI Workshop Report*, 2010.
http://www.rusi.org/downloads/assets/2010_Austere_Airpower.pdf (accessed 27 Apr 2012).

Books

- Aronsson, Lisa. "Strategic Considerations for the Anglo-American Alliance," in *A Question of Security: The British Defence Review in an Age of Austerity*, ed. Michael Codner and Michael Clarke, 79-90. London, UK: I.B.Tauris, 2011.
- Ben-Horin, Yoav and Barry Posen. *Israel's Strategic Doctrine*. Santa Monica, CA: RAND, 1981.
<http://www.rand.org/content/dam/rand/pubs/reports/2007/R2845.pdf> (accessed 24 Jan 2012).
- Bowen, Wyn Q. "The Dimensions of Asymmetric Warfare," in *The Changing Face of Military Power: Joint Warfare in an Expeditionary Era*, ed. Andrew Dorman, Mike Smith and Matthew Uttley, 15-44. Basingstoke, UK: Palgrave, 2002.
- Brown, David. "Striking a Balance? Labour's Legacy and the Next Chapter of British Defence Policy," in *The Development of British Defence Policy: Blair Brown and Beyond*, ed. David Brown, 215-239. Farnham, UK: Ashgate Publishing Ltd, 2010
- Chalmers, Malcolm. *Paying for Defence: Military Spending and British Decline*. London, UK: Pluto Press 1985.
- Chalmers, Malcolm. "The Lean Years: Defence Consequences of the Fiscal Crisis," in *A Question of Security: The British Defence Review in an Age of Austerity*, ed. Michael Codner and Michael Clarke, 33-75. London, UK: I.B.Tauris, 2011.
- Chant, Christopher. *The History of the RAF 1939-1989*. London, UK: Chevprime, 1990.
- Clarke, Michael. "The United Kingdom's Strategic Moment," in *A Question of Security: The British Defence Review in an Age of Austerity*, ed. Michael Codner and Michael Clarke, 7-19. London, UK: I.B.Tauris, 2011.

- Clifford, Kenneth J. *Progress and Purpose: A Developmental History of the United States Marine Corps 1900-1970*. Washington, DC: GPO, 1973.
- Codner, Michael. "A Force for Honour? UK Military Strategic Options," in *A Question of Security: The British Defence Review in an Age of Austerity*, ed. Michael Codner and Michael Clarke, 153-174. London, UK: I.B.Tauris, 2011.
- Cohen, Eliezer. *Israel's Best Defense: The First full Story of the Israeli air Force*. NY: Orion Books, 1993.
- Cohen, Eliot A., Michael J, Eisenstadt, and Andrew J. Bacevich. *Knives, Tanks, and Missiles': Israel's Security Revolution*. Washington, DC: Washington Institute for Near East Policy, 1998.
- Cordesman, Anthony H., Aram Nerguizian and Ionut C. Popescu. *Israel and Syria: The Military Balance and Prospects of War*. Westport, CT: Praeger, 2008.
- Cordesman, Anthony H. and Abraham R. Wagner. *The Lessons of Modern War Volume III: The Afghan and Falklands Conflicts*. Boulder, CO: Westview Press, 1990.
- Crane, Conrad C. *American Airpower Strategy in Korea 1950-1953*. University Press of Kansas, 2000.
- Dolman, Everett C. *Pure Strategy: Power and Principle in the Space and Information Age*. Abingdon, UK: Frank Cass, 2005.
- Dorman, Andrew. "British Defence Policy in the Post-Cold War Era: History Comes Full Circle," in *The Changing Face of Military Power: Joint Warfare in an Expeditionary Era*, ed. Andrew Dorman, Mike Smith and Matthew Uttley, 177-200. Basingstoke, UK: Palgrave, 2002.
- Dupoy, Trevor N. *Elusive Victory: The Arab-Israeli Wars, 1947-1974*. NY: Harper & Row, 1978.
- Edmonds, Martin. "Defence Management and the Impact of 'Jointery'," in *The Changing Face of Military Power: Joint Warfare in an Expeditionary Era*, ed. Andrew Dorman, Mike Smith and Matthew Uttley, 151-176. Basingstoke, UK: Palgrave, 2002.
- Freedman, Lawrence. *The Politics of British Defence, 1979-98*. Basingstoke, UK: Macmillan Press, 1999.
- Freedman, Lawrence. "Britain and the Revolution in Military Affairs," in *The Changing Face of Military Power: Joint Warfare in an Expeditionary Era*, ed. Andrew Dorman, Mike Smith and Matthew Uttley, 111-128. Basingstoke, UK: Palgrave, 2002.
- Freedman, Lawrence. "Air Power and the Falklands, 1982," in *A History of Air Warfare*, ed. John A. Olsen, 157-174. Dulles, VA: Potomac Books, 2010.
- Gilpin, Robert. *War and Change in World Politics*. Cambridge, UK: Cambridge University Press, 1981.

- Gordon, Shmuel L. "Air Superiority in the Israel-Arab Wars, 1967-1982," in *A History of Air Warfare*, ed. John A. Olsen, 127-156. Dulles, VA: Potomac Books, 2010.
- Goulter, Christina. "Air Power and Expeditionary Warfare," in *Air Power 21: Challenges for the New Century*, ed. Peter Gray, 183-207. London, UK: HMSO, 2000.
- Grove, Eric. "A Case for the RAF," in *A Question of Security: The British Defence Review in an Age of Austerity*, ed. Michael Codner and Michael Clarke, 211-222. London, UK: I.B.Tauris, 2011.
- Gray, Colin S. *Explorations in Strategy*. Westport, CT: Praeger Publishers, 1996.
- Gray, Peter W. "Air Power: Strategic Lessons from an Idiosyncratic Operation," in *The Falklands Conflict Twenty Years On: Lessons for the Future*, ed. Stephen Badsey, Rob Havers and Mark Grove, 253-264. Abingdon, UK: Cass, 2005.
- Griffith, Thomas E. *MacArthur's Airman: General George C. Kenney and the War in the Southwest Pacific*. University of Kansas, 1998.
- Hartley, Keith. "The Economics of Joint Forces," in *The Changing Face of Military Power: Joint Warfare in an Expeditionary Era*, ed. Andrew Dorman, Mike Smith and Matthew Uttley, 201-215. Basingstoke, UK: Palgrave, 2002.
- Henriksen Dag. *NATO's Gamble: Combining Diplomacy and Airpower in the Kosovo Crisis 1998-1999*. Annapolis, MD: Naval Institute Press, 2007.
- Herzog, Chaim. *The Arab-Israeli Wars: War and Peace in the Middle East*. NY: Random House, 1982.
- Horwood, Ian. *Interservice Rivalry and Airpower in the Vietnam War*. Fort Leavenworth, KA: Combat Studies Institute Press, 2009.
- Johnson, David. *Military Capabilities for Hybrid War: Insights from the Israel Defense Forces in Lebanon and Gaza*. Santa Monica, CA: RAND, 2010.
http://www.rand.org/pubs/occasional_papers/2010/RAND_OP285.pdf (accessed 24 Mar 2012).
- Johnson, Edward C. *Marine Corps Aviation: The Early Years 1912-1940*. Washington, DC: GPO, 1977.
- Kennett, Lee. *The First Air War 1914-1918*. NY: The Free Press, 1999.
- Kuhn, Thomas, S. *The Structure of Scientific Revolutions*. 3rd Ed. Chicago: Chicago University Press, 1996 (first published in 1962).
- Lambeth, Benjamin S. *The Transformation of American Air Power*. NY: RAND, 2000.
- Lambeth, Benjamin S. *Air Operations in Israel's War Against Hezbollah: Learning From Lebanon and Getting it Right in Gaza*. Santa Monica, CA: RAND, 2011.

- Mersky, Peter B. *US Marine Corps Aviation Since 1912*. 4th Ed. Annapolis, MD: Naval Institute Press, 2009.
- Miller, Edward S. *War Plan Orange: The US Strategy to Defeat Japan, 1897-1945*. Annapolis, MD: Naval Institute Press, 1991.
- Morrow, John H. Jr. "The First World War, 1914-1919," in *A History of Air Warfare*, ed. John A. Olsen, 3-26. Dulles, VA: Potomac Books, 2010.
- Overy, Richard J. *The Air War 1939-1945*. Dulles, VA: Potomac Books, 1980.
- Peach, Stuart. "The Airmen's Dilemma: To Command or to Control?" in *Air Power 21: Challenges for the New Century*, ed. Peter Gray, 123-151. London, UK: HMSO, 2000.
- Peattie, Mark R. *Sunburst: The Rise of Japanese Naval Air Power, 1909-1941*. Annapolis, MD: Naval Institute Press, 2001.
- Rubenstein, Murray and Richard Goldman. *The Israeli Air Force Story*. London, UK: Arms and Armour Press, 1979.
- Sabin, Philip. *British Strategic Priorities in the 1990s*. Adelphi Papers 254. London, UK: Brasseys, 1990
- Sabin, Philip. "Western Strategy in the New Era: the Apotheosis of Air Power," *The Changing Face of Military Power: Joint Warfare in an Expeditionary Era*, ed. Andrew Dorman, Mike Smith and Matthew Uttley, 91-110. Basingstoke, UK: Palgrave, 2002.
- Sherrod, Robert. *History of Marine Corps Aviation in World War II*. Baltimore, MD: Nautical & Aviation Pub. Co., 1987.
- Smith, Malcolm. *British Air Strategy Between the Wars*. Oxford, UK: Clarendon Press, 1984.
- Smith, Mike and Matthew Uttley. "Military Power in a Multipolar World," in *The Changing Face of Military Power: Joint Warfare in an Expeditionary Era*, ed. Andrew Dorman, Mike Smith and Matthew Uttley, 1-14. Basingstoke, UK: Palgrave, 2002.
- Taylor, Trevor. "Jointery and the Defence Review," in *A Question of Security: The British Defence Review in an Age of Austerity*, ed. Michael Codner and Michael Clarke, 175-186. London, UK: I.B.Tauris, 2011.
- Waldrop, M. Mitchell. *Complexity: The Emerging Science at the Edge of Order and Chaos*. NY: Simon & Schuster, 1992.
- White, Rowland. *Vulcan 607*. London, UK: Corgi, 2007.
- Yonay, Ehud. *No Margin for Error: The Making of the Israeli Air Force*. New York: Pantheon Books, 1993.

Government Documents

"A Brief Guide to Previous British Defence Reviews," House of Commons Library, International Affairs and Defence Section, SN/IA/5714, 19

- Oct 2010. www.parliament.uk/briefing-papers/SN05714.pdf (accessed 27 Nov 2011).
- “Adaptability and Partnership: Issues for a Strategic Defence Review,” *The Defence Green Paper*. 3 Feb 2010.
<http://www.mod.uk/DefenceInternet/AboutDefence/CorporatePublications/ConsultationsandCommunications/PublicConsultations/TheDefenceGreenPaper2010Discussion.htm> (accessed 3 May 2012).
- “Air Preparations and Offensives,” *Memorandum for War Cabinet by General Smuts*, 18 Sep 1917. The UK National Archives CAB/24/26
- Air Publication (AP) 3000. *British Air Power Doctrine*. 4th Ed. 2009.
http://www.raf.mod.uk/rafcms/mediafiles/9E435312_5056_A318_A88F14CF6F4FC6CE.pdf (accessed 2 April 2012).
- Air Publication (AP) 3003. *A Brief History of the Royal Air Force*. London, UK: HMSO, 2004.
- A Strong Britain in an Age of Uncertainty: The National Security Strategy*. Oct 2010.
http://www.direct.gov.uk/prod_consum_dg/groups/dg_digitalassets/@dg/@en/documents/digitalasset/dg_191639.pdf?CID=PDF&PLA=furl&CRE=nationalsecuritystrategy (accessed 3 May 2012).
- Defence Committee Proceedings, Session 1997-98, Eighth Report, 3 Sep 1998.
<http://www.publications.parliament.uk/pa/cm199798/cmselect/cmdfence/138/13802.htm> (accessed 3 May 2012).
- Defence Committee Proceedings, Session 2010-11, First Report, 7 Sep 2010. The Strategic Defence and Security Review.
<http://www.publications.parliament.uk/pa/cm201011/cmselect/cmdfence/345/34502.htm> (accessed 3 May 2012).
- Defence Committee Proceedings, Session 2010-2011, Sixth Report, 20 July 2011. The Strategic Defence and Security Review.
<http://www.publications.parliament.uk/pa/cm201012/cmselect/cmdfence/761/76102.htm> (accessed 5 May 2012).
- Defence Committee Proceedings, Session 2010-12, Fourth Special Report, 1 Dec 2010. The Strategic Defence and Security Review: Government Response to the Committee’s First Report of Session 2010-11.
<http://www.publications.parliament.uk/pa/cm201011/cmselect/cmdfence/638/63802.htm> (accessed 3 May 2012).
- “Defence Personnel Statistics”, House of Commons Library, Social and General Statistics Section, SN/SG/02183, 15 March 2012.
<http://www.parliament.uk/briefing-papers/SN02183> (accessed 21 Apr 2012).

- First Report of the Committee on Air Organisation and Home Defence Against Air Raids.* 9 Jul 1917. The UK National Archives CAB/24/20.
- Future Air and Space Operational Concept (FASOC) 2009.* Development, Concepts, and Doctrine Centre.
<http://www.mod.uk/DefenceInternet/MicroSite/DCDC/OurPublications/Concepts/> (accessed 3 May 2012).
- Future Character of Conflict.* Strategic Trends Programme, 3 Feb 2010.
<http://www.mod.uk/DefenceInternet/MicroSite/DCDC/OurPublications/Concepts/FutureCharacterOfConflict.htm> (accessed 4 Mar 2012).
- Future Land Operational Concept 2008.* Development, Concepts, and Doctrine Centre.
<http://www.mod.uk/DefenceInternet/MicroSite/DCDC/OurPublications/Concepts/> (accessed 3 May 2012).
- Future Maritime Operational Concept 2007.* Development, Concepts, and Doctrine Centre.
<http://www.mod.uk/DefenceInternet/MicroSite/DCDC/OurPublications/Concepts/> (accessed 3 May 2012).
- Future Roles and Missions of the United States Navy and Marine Corps.* Hearing before the Seapower and Expeditionary Forces Subcommittee of the Committee on Armed Services House of Representatives, GPO, 26 Mar 2009.
<http://www.gpo.gov/fdsys/pkg/CHRG-111hhrg54775/html/CHRG-111hhrg54775.htm> (accessed 22 Mar 2012).
- Global Strategic Trends – Out to 2040.* 4th Ed. Strategic Trends Programme. 2 Feb 2010.
<http://www.mod.uk/DefenceInternet/MicroSite/DCDC/OurPublications/StrategicTrends+Programme/> (accessed 16 Feb 2012).
- Joint Doctrine Publication (JDP) 0-01. *British Defence Doctrine.* 3rd Ed. Aug 2008.
- Joint Doctrine Publication (JDP) 0-01. *British Defence Doctrine.* 4th Ed. 21 Nov 2011.
<http://www.mod.uk/DefenceInternet/MicroSite/DCDC/OurPublications/JDWP/Jdp001FourthEditionBritishDefenceDoctrine.htm> (accessed 3 May 2012).
- Joint Doctrine Publication (JDP) 1-0 *Campaigning.* 2nd Ed. Dec 2008.
http://www.mod.uk/NR/rdonlyres/B875F5EC-B17F-4CA3-BB2D-B418B7B284C0/0/20090219JDP_01_2EdUDCDCIMAPPS.pdf (accessed 5 May 2012).
- Joint Publication (JP) 0-2. *Unified Action Armed Forces.* 10 Jul 2001.
http://www.bits.de/NRANEU/others/jp-doctrine/jp0_2.pdf (accessed 25 Apr 2012).

- Joint Warfare Publication (JWP) 0-01. *British Defence Doctrine*. 1st Ed, 1996.
- Lessons of Iraq*. House of Commons Defence Committee Third Report of Session 2003-04, Vol 1: Report, 16 March 2004.
<http://www.publications.parliament.uk/pa/cm200304/cmselect/cmdfence/57/57.pdf> (accessed 22 Apr 2012).
- Marine Corps Doctrinal Publication (MCDP) 1-0. *Marine Corps Operations*. 27 Sep 2001.
http://www.fs.fed.us/fire/doctrine/genesis_and_evolution/source_materials/MCDP-1-0_marine_corps_operations.pdf (accessed 25 Jan 2012).
- Marine Corps Doctrinal Publication (MCDP) 1-2. *Campaigning*. 1 Aug 1997.
<http://www.marines.mil/news/publications/Documents/MCDP%201-2%20Campaigning.pdf> (accessed 25 Jan 2012).
- Marine Corps Operating Concepts for a Changing Security Environment*. 2nd Ed. June 2007.
http://www.quantico.usmc.mil/seabasing/docs/Marine_Corps_Operating_Concepts_2ndEd.pdf (accessed 22 Mar 2012).
- Marine Corps Operating Concepts: Assuring Littoral Access...Proven Crisis Response*. 3rd Ed. June 2010. <http://defensetech.org/wp-content/uploads//2010/06/usmcooperatingconcept.pdf> (accessed 22 Mar 2012).
- Marine Corps Vision & Strategy 2025*.
http://www.onr.navy.mil/~media/Files/About%20ONR/usmc_vision_strategy_2025_0809.ashx (accessed 22 Mar 2012).
- Marine Corps Warfighting Publication (MCWP) 3-2. *Aviation Operations*. 9 May 2000.
<http://www.marines.mil/news/publications/Documents/MCWP%203-2%20Aviation%20Operations.pdf> (accessed 25 Jan 2012).
- National Security Act of 1947*. Public law 253, 80th Congress: Chapter 343, 1st Session: S. 758, 26 Jul 1947.
<http://www.google.com/url?sa=t&rct=j&q=national%20security%20act%20of%201947%20original%20text&source=web&cd=1&ved=0CB8QFjAA&url=http%3A%2F%2Fwww.drworley.org%2FNSPcommon%2FEarly%2520Cold%2520War%2F1947%2520National%2520Security%2520Act.doc&ei=BDujT9qsC5Kftwfx14jGDw&usg=AFQjCNEygfp3cppoU6ohHo4IJCJJ71-DnQ> (accessed 25 Apr 2012).
- Policy for the Organization of Fleet Marine Forces for Combat*. Marine Corps Order 3120.8A, 26 Jun 1992.
<http://www.marines.mil/news/publications/Documents/MCO%203120.8A.pdf> (accessed 22 Mar 2012).
- Second Report of the Committee on Air Organisation and Home Defence Against Air Raids*. 17 Aug 1917. The UK National Archives CAB/24/22.

- Securing Britain in an Age of Uncertainty: The Strategic Defence and Security Review*. October 2010.
http://www.direct.gov.uk/prod_consum_dg/groups/dg_digitalassets/@dg/@en/documents/digitalasset/dg_191634.pdf?CID=PDF&PLA=furl&CRE=sdsr (accessed 4 Mar 2012).
- Strategic Defence Review*. July 1998.
http://www.mod.uk/NR/rdonlyres/65F3D7AC-4340-4119-93A2-20825848E50E/0/sdr1998_complete.pdf (accessed 28 Jan 2012).
- Statement on the Defence Estimates 1966 Part 1*. 11 Feb 1966. The UK National Archives CAB/129/124.
- Statement on the Defence Estimates 1974*. 21 Jan 1974. The UK National Archives CAB/129/174/5.
- Statement on the Defence Estimates 1975*. 25 Feb 1975. The UK National Archives CAB/129/181/21.
- Statement on the Defence Estimates 1981*. 16 Mar 1981. The UK National Archives CAB/129/211/11.
- Sustaining US Global Leadership: Priorities for 21st Century Defense*, 3 January 2012.
<http://graphics8.nytimes.com/packages/pdf/us/20120106-PENTAGON.PDF> (accessed 15 Mar 2012).
- The Falklands Campaign: The Lessons*. London, UK: HMSO 1983.
- The Falklands Campaign: "The Lessons"* Hansard 1803-2005, Lords Sitting, 14 Dec 1982.
<http://hansard.millbanksystems.com/lords/1982/dec/14/the-falklands-campaign-the-lessons-cmnd> (accessed 3 May 2012).
- "The National Security Strategy: A Strong Britain in an Age of Uncertainty." 18 Oct 2010.
http://www.direct.gov.uk/en/N11/Newsroom/DG_191679 (accessed 4 Mar 2012).
- The Strategic Defence and Security Review – Securing Britain in an Age of Uncertainty fact Sheets*, 19 Oct 2010.
<http://www.cabinetoffice.gov.uk/resource-library/strategic-defence-and-security-review-securing-britain-age-uncertainty> (accessed 21 Apr 12).
- The Strategic Defence Review White Paper*. House of Commons Research Paper 98/91, 15 Oct 1998.
http://archives.livreblancdefenseetsecurite.gouv.fr/IMG/pdf/The_strategic_Defense_Review_White_paper_1998.pdf (accessed 25 Jan 2012).
- The Strategy for Defence*. MoD, Oct 2011.
http://www.mod.uk/NR/rdonlyres/0A42D98D-99B0-4939-8635-98E172EBCADC/0/strategy_for_defence_oct2011.pdf (accessed 15 Feb 2012).

Personal Communications – Interviews

- Dalton, Air Chf Mshl Sir Stephen. (Chief of the Air Staff), in discussion with the author, 21 February 2012.
- Stanhope, Adm Sir Mark. (First Sea Lord), in discussion with the author, 17 February 2012.
- Wall, Gen Sir Peter. (Chief of the General Staff), in discussion with the author, 20 February 2012.

Reports

- Defence Reform: An independent report into the structure and management of the Ministry of Defence.* The Levene Report, MoD, June 2011.
http://www.mod.uk/NR/rdonlyres/B4BA14C0-0F2E-4B92-BCC7-8ABFCFE7E000/0/defence_reform_report_struct_mgt_mod_27june_2011.pdf (accessed 27 Apr 2012).
- Evolving the MAGTF for the 21st Century.* USMC, 20 Mar 2009.
http://www.quantico.usmc.mil/MCBQ%20PAO%20Press%20Releases/090430%20CDI%20Docs/CDI_EvolvingMAGTF21stCent.pdf (accessed 23 Mar 2012).
- Expeditionary Maneuver From the Sea: The Capstone Operational Concept.* USMC, 25 Jun 2008.
http://www.google.com/url?sa=t&rct=j&q=expeditionary%20maneuver%20from%20the%20sea&source=web&cd=1&ved=0CCMQFjAA&url=http%3A%2F%2Fwww.quantico.usmc.mil%2Fdownload.aspx%3FPath%3D.%2FUploads%2FFiles%2Fsvg_002_USMC%2520Capstone%2520Concept.pdf&ei=NT2jTC7Iojq8wSlt81X&usg=AFQjCNHzuB3LIOZVBVmZg78knYZB8_pmCw (accessed 22 Mar 2012).
- Shared Responsibilities: A national security strategy for the UK.* The final report of the Institute for Public Policy Research Commission on National Security in the 21st Century, June 2009.
<http://www.ippr.org/publications/55/1704/shared-responsibilities-a-national-security-strategy-for-the-uk> (accessed 17 Mar 2012).
- The Long War: Send in the Marines.* Marine Corps Operational Employment Concept to Meet an Uncertain Security Environment.
<http://navsci.berkeley.edu/ma154/19%20Apr%2011/thelongwarsendinthemarines.pdf> (accessed 22 Mar 2012).

Speeches

- Cameron, David. “Statement to the House of Commons on the Strategic Defence and Security Review,” 19 October 2010.
<http://www.number10.gov.uk/news/sdsr/> (accessed 5 May 2012).

- Dalton, Stephen. "Creating and Exploiting Decision Advantage," Speech at the Defence Information Superiority Conference 2010.
http://www.raf.mod.uk/rafcms/mediafiles/AC1CB7E2_5056_A318_A88D37B22D4B9657.pdf (accessed 25 Jan 2012).
- Fox, Liam. "Giving our Armed Forces what they need," 8 Oct 2009.
http://www.conservatives.com/news/speeches/2009/10/liam_fox_giving_our_armed_forces_what_they_need.aspx (accessed 3 May 2012).
- Fox, Liam. Speech delivered at the Soldiers, Sailors, Airmen and Families Association industry dinner, UK, 25 Oct 2010.
<http://www.mod.uk/DefenceInternet/AboutDefence/People/Speeches/SofS/20101025SsafaIndustryDinner.htm> (accessed 3 May 2012).
- Fox, Liam. "Air Power in an Age of Austerity," Speech at the RUSI Air Power Conference, London, 13 Jul 2011.
<http://www.rusi.org/events/past/ref:E4D6635E4D5ADE/info:public/infoID:E4E1F18A71C987/> (accessed 3 May 2012).
- Gates, Robert M. Defense Budget Recommendation Statement, Arlington, VA., 6 Apr 2009.
<http://www.defense.gov/speeches/speech.aspx?speechid=1341> (accessed 3 May 2012).
- Richards, David. "Future Conflict and its Prevention: People and the Information Age," Speech delivered at International Institute for Strategic Studies, London, 18 Jan 2010.
<http://www.iiss.org/recent-key-addresses/general-sir-david-richards-address/> (accessed 3 May 2012).
- Richards, David. "Securing Britain in an Age of Uncertainty," Speech delivered at the Policy Exchange, London, 22 Nov 2010.
<http://www.mod.uk/DefenceInternet/AboutDefence/People/Speeches/ChiefStaff/20101122SecuringBritainInAnAgeOfUncertainty.htm> (accessed 3 May 2012).
- Richards, David. 11th Annual Chief of Defence Staff Lecture, Royal United Services Institute, London, 14 Dec 2010.
<http://www.mod.uk/DefenceInternet/AboutDefence/People/Speeches/ChiefStaff/2010121411thAnnualChiefOfDefenceStaffLecture.htm> (accessed 3 May 2012).

Staff Studies

The Strategic Defence Review: How Strategic? How much of a Review?
 The Centre for Defence Studies. London, UK: Brassey's, 1998.

Electronic Publications

Conan, Tom. "The Falklands War: Closer Fought Than Commonly Understood," 1 January 2007.

<http://arrow.dit.ie/cgi/viewcontent.cgi?article=1053&context=aaschmedart&sei-redir=1&referer=http%3A%2F%2Fwww.google.co.uk%2Furl%3Fsa%3Dt%26rct%3Dj%26q%3Dthe%2520falklands%2520war%253A%2520closer%2520fought%2520than%26source%3Dweb%26cd%3D1%26sqi%3D2%26ved%3D0CGoQFjAA%26url%3Dhttp%253A%252F%252Farrow.dit.ie%252Fcgi%252Fviewcontent.cgi%253Farticle%253D1053%2526context%253Daaschmedart%26ei%3DFzOnT5rkIley8QTc6tGrAw%26usg%3DAFQjCNEDjdE5KtThRS9xnWvcBXNmDhqM2g#search=%22falklands%20war%3A%20closer%20fought%20than%22> (accessed 28 January 2012).

